VHF FM TRANSCEIVER

TK-7100

SERVICE MANUAL

KENWOOD

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CONTENTS

GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of this publication date. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions, which are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, and chassis. If the part number is not known, include the chassis or kit number of which it is a part and a sufficient description of the required component for proper identification.

PERSONAL SAFETY

The following precautions are recommended for personal safety :

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- DO NOT transmit until all RF connectors are secure and any open connectors are properly terminated.
- SHUT OFF this equipment when near electrical blasting caps or while in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by only qualified technicians.

PRE-INSTALLATION CONSIDERATIONS

1. UNPACKING

Unpack the radio from its shipping container and check for accessory items. If any item is missing, please contact KENWOOD immediately.

2. LICENSING REQUIREMENTS

Federal regulations require a station license for each radio installation (mobile or base) be obtained by the equipment owner. The licensee is responsible for ensuring transmitter power, frequency, and deviation are within the limits permitted by the station license.

Transmitter adjustments may be performed only by a licensed technician holding an FCC first, second or general class commercial radiotelephone operator's license. There is no license required to install or operate the radio.

3. PRE-INSTALLATION CHECKOUT

3-1. Introduction

Each radio is adjusted and tested before shipment. However, it is recommended that receiver and transmitter operation be checked for proper operation before installation.

3-2. Testing

The radio should be tested complete with all cabling and accessories as they will be connected in the final installation. Transmitter frequency, deviation, and power output should be checked, as should receiver sensitivity, squelch operation, and audio output. Signalling equipment operation should be verified.

4. PLANNING THE INSTALLATION

4-1. General

Inspect the vehicle and determine how and where the radio antenna and accessories will be mounted.

Plan cable runs for protection against pinching or crushing wiring, and radio installation to prevent overheating.

4-2. Antenna

The favored location for an antenna is in the center of a large, flat conductive area, usually at the roof center. The trunk lid is preferred, bond the trunk lid and vehicle chassis using ground straps to ensure the lid is at chassis ground.

4-3. Radio

The universal mount bracket allows the radio to be mounted in a variety of ways. Be sure the mounting surface is adequate to support the radio's weight. Allow sufficient space around the radio for air cooling. Position the radio close enough to the vehicle operator to permit easy access to the controls when driving.

4-4. DC Power and wiring

1. This radio may be installed in negative ground electrical systems only. Reverse polarity will cause the cable fuse to blow. Check the vehicle ground polarity before installation to prevent wasted time and effort.
2. Connect the positive power lead directly to the vehicle battery positive terminal. Connecting the Positive lead to any other positive voltage source in the vehicle is not recommended.
3. Connect the ground lead directly to the battery negative terminal.
4. The cable provided with the radio is sufficient to handle the maximum radio current demand. If the cable must be extended, be sure the additional wire is sufficient for the current to be carried and length of the added lead.

GENERAL / SYSTEM SET-UP

5. INSTALLATION PLANNING – CONTROL STATIONS

5-1. Antenna system

Control station. The antenna system selection depends on many factors and is beyond the scope of this manual. Your KENWOOD dealer can help you select an antenna system that will best serve your particular needs.

5-2. Radio location

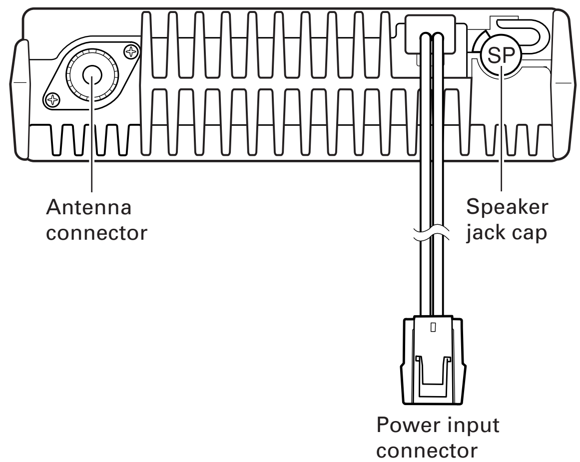
Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply to allow adequate cooling.

SERVICE

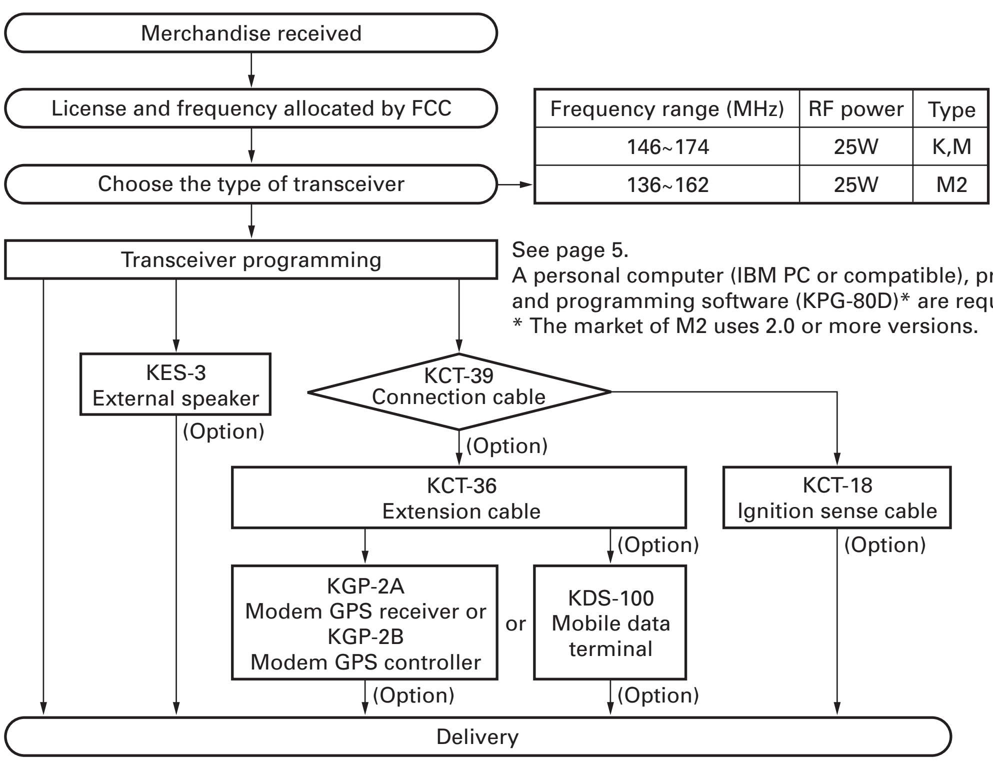
This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained in this manual.

NOTE

If you do not intend to use the 3.5-mm jack for the external speaker, fit the supplied speaker-jack cap to stop dust and sand from getting in.



SYSTEM SET-UP



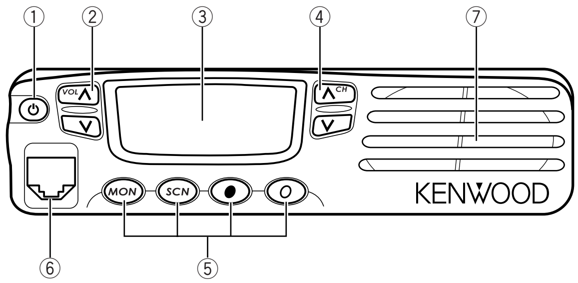
Frequency range (MHz)	RF power	Type
146~174	25W	K,M
136~162	25W	M2

See page 5.
A personal computer (IBM PC or compatible), programming interface (KPG-46), and programming software (KPG-80D)* are required for programming.
* The market of M2 uses 2.0 or more versions.

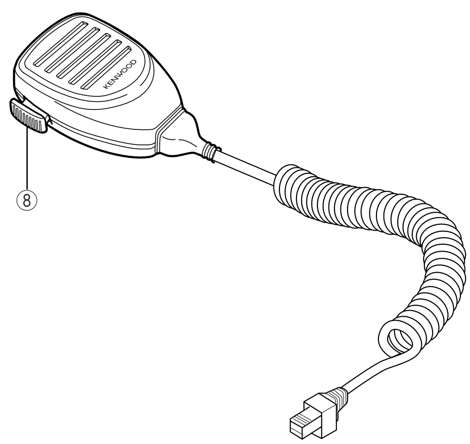
OPERATING FEATURES

1. Controls and Functions

1-1. Front Panel



1-2. Microphone



① ⏻ (Power) switch
Press to switch the transceiver ON. Press and hold for approximately 1 second to switch the transceiver OFF.

② **VOL ∧ / ∨ keys (left side)**
Press to increase or decrease the volume level.

③ **Display**
Refer to right.

④ **CH ∧ / ∨ keys (right side)**
Press to increase or decrease the channel number.

⑤ **MON / SCN / ● / ○ keys**
PF (Programmable Function) keys. Press each key to activate its programmable function.

⑥ **Microphone jack**
Insert the microphone plug into this jack.

⑦ **Speaker**
Internal speaker.

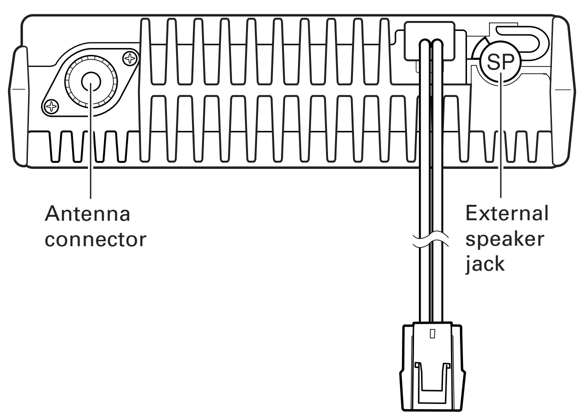
⑧ **PTT switch**
Press this switch, then speak into the microphone to call a station.

1-3. Display



Indicator	Description
TX	Appears while transmitting.
	Appears when trunking is activated.
	Appears while monitoring the selected channel (squelch is off).
CALL	Appears when making a call using Code Squelch or Selective Call. Appears and blinks when receiving a Code Squelch call.
SCN	Appears while scanning.
AUX	Appears when the AUX port has been activated or when the Scrambler function has been selected.
TA	Appears while using the Talk Around function.
P	The selected channel is set as a Priority channel.
A	The selected channel is added to the scanning sequence.
BUSY	Appears when a signal is detected on the currently selected channel.
	Appears when the transceiver keys have been locked, using the Key Lock function.
	Displays the currently selected group and channel number, or the channel name.

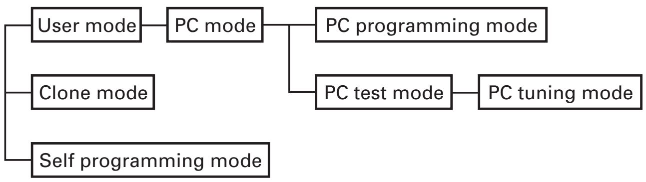
1-4. Rear Panel



Power input connector

REALIGNMENT

1. Modes



Mode	Function
User mode	For normal use.
PC mode	Used for communication between the radio and PC (IBM compatible).
PC programming mode	Used to read and write frequency data and other features to and from the radio.
PC test mode	Used to check the radio using the PC. This feature is included in the FPU.
PC tuning mode	Used to tune the radio using the PC.
Clone mode	Used to transfer programming data from one radio to another.
Self programming mode	You can program the frequency, signalling and other functions using only the radio.

2. How to Enter Each Mode

Mode	Operation
User mode	Power ON
PC mode	Received commands from PC
Clone mode	[CH DOWN]+Power ON (Two seconds)
Self programming mode	[MON]+Powr ON (Two seconds)

3. PC Mode

3-1. Preface

The TK-7100 transceiver is programmed using a personal computer, a programming interface (KPG-46) and programming software (KPG-80D).

The programming software can be used with an IBM PC or compatible. Figure 1 shows the setup of an IBM PC for programming.

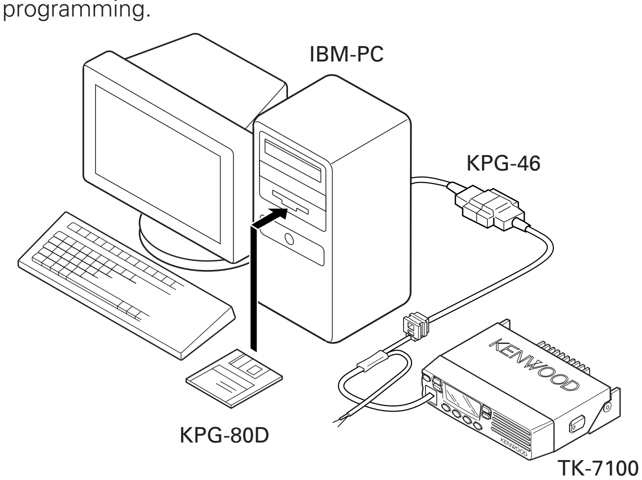


Fig. 1

3-2. Connection Procedure

1. Connect the TK-7100 to the personal computer with the interface cable.
2. When the Power is switched on, user mode can be entered immediately. When the PC sends a command, the radio enters PC mode.
   When data is transmitted from transceiver, the TX indicator blink.
   When data is received by the transceiver, the BUSY indicator blink.
   In the PC mode, " PC " is displayed on the LCD.

3-3. KPG-46 Description (PC programming interface cable : Option)

The KPG-46 is required to interface the TK-7100 to the computer. It has a circuit in its D-subconnector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-46 connects the modular microphone jack of the TK-7100 to the computers RS-232C serial port.

3-4. Programming Software Description

KPG-80D is the programming software for TK-7100 supplied on three 3.5" floppy diskettes. This software runs under Windows 98, ME, Windows 2000 or XP on an IBM-PC or compatible machine.

The data can be input to or read from TK-7100 and edited on the screen. The programmed or edited data can be printed out. It is also possible to tune the transceiver.

4. Clone Mode

Programming data can be transferred from one radio to another by connecting them via their modular microphone jacks. The operation is as follows (the transmit radio is the master and the receive radio is the slave).

Note :

Clone mode should be enabled.

1. Turn the master TK-7100 power ON with the [CH DOWN] key held down (2 seconds), " CLONE " is displayed on the LCD.
2. Power on the slave TK-7100.
3. Connect the cloning cable (No. E30-3382-05) to the modular microphone jacks on the master and slave.
4. Press the [MON] key on the master TK-7100 transceiver. The data of the master is sent to the slave. While the master is sending data, [TX] icon blinked. While the slave is receiving the data, " PC " is displayed and [BUSY] icon blinked. When cloning of data is completed, the master displays "END", and the master [TX] icon turned off, and the slave automatically operates in the User mode. The slave can then be operated by the same program as the master.
5. The other slave can be continuously cloned. Carry out the operation in step 2 to 4.

REALIGNMENT

4-1. Adding the data password.

If the data password is set in the optional feature menu, you must enter the password (Master transceiver) to activate a clone mode.

You can use 1, 2, 3, and 4 to configure the password. The maximum length of the password is 6 digits.

1. [CH DOWN]+Power ON.
2. "CLN LOCK" is displayed on the LCD.
3. Enter the password using 1 : [MON] key, 2 : [SCN] key, 3 : [●] key and 4 : [O] key.
4. Press [CH DOWN] key.
5. If the password matches, the transceiver enters a clone mode and " CLONE " is displayed. Otherwise, transceiver beeps and returns to the password input mode.

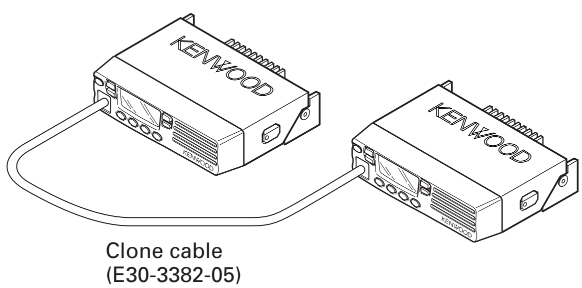
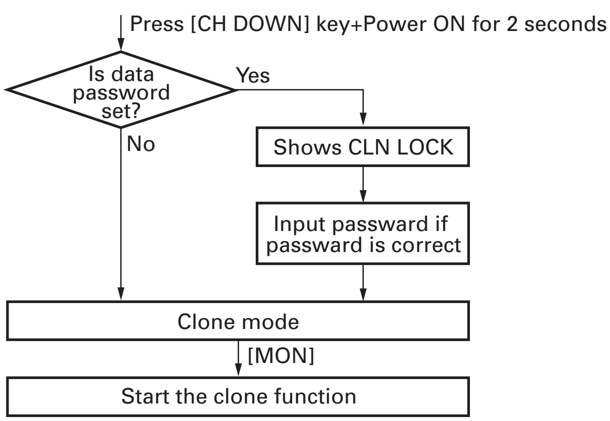


Fig. 2

■ Flow Chart (Master radio)



5. Self Programming Mode

Write mode for frequency data and signalling, etc. To be used ONLY by the authorized service person maintaining the user's equipment. After programming, reset the FPU to the "Self- Programming" disabled mode. Radios CANNOT be delivered to the end-user in the self-programming mode.

5-1. Enter to the Self Programming Mode

Hold down the [MON] key and turn the power switch on. When enter the self programming mode, " SELF " is displayed.

5-2. Adding the Data Password

If the data password is set in the optional feature menu, you must enter the password to activate a self programming mode.

You can use 1, 2, 3 and 4 to configure the password. The maximum length of the password is 6 digits.

1. [MON]+Power ON.
2. "SELFLOCK" is displayed on the LCD.
3. Enter the password using 1 : [MON] key, 2 : [SCN] key, 3 : [●] key and 4 : [O] key.
4. Press [CH DOWN] key.
5. If the password matches, the transceiver enters a self programming mode and " SELF " is displayed. Otherwise, transceiver beeps and returns to the password input mode.

Note :

This mode (self programming mode) cannot be set when it has been disabled with the FPU.

5-3. Channel Setting Mode

Each channel can be setup in its action mode by using the panel keys.

- Pressing [MON] when " SELF " is displayed, sets channel setting mode.
- Select an item set using [●] then change the selection with the [CH UP] or [CH DOWN].
- The data displayed using [SCN] is stored in the memory and then proceeds to the next item.
- Pressing [●] proceeds to the next item without storing it in the memory.
- Press [MON] to set the display to " SELF " and return to reset (default) status.

The setup items for channel setting mode are listed below.

No.	Function	Choices	Display	Remarks
	Select channel	1~64	1– 1. 1– 64.	● key : Group/Channel selection
	Select group	1~8	1.– 1 8.– 1	● key : Group/Channel selection
1	RX frequency	Step 2.5kHz~ 1MHz	STP 250 STP 1M	Display when an item is selected or a step is changed (about 0.5 seconds). O key : Select the frequency step
		Blank 100.0000~ 550.0000MHz	R.------- R.150.0000	O key : Hold 1 second to frequency on/blank switching. The right most dot indicates 50Hz digit. (On=5, Off=0)

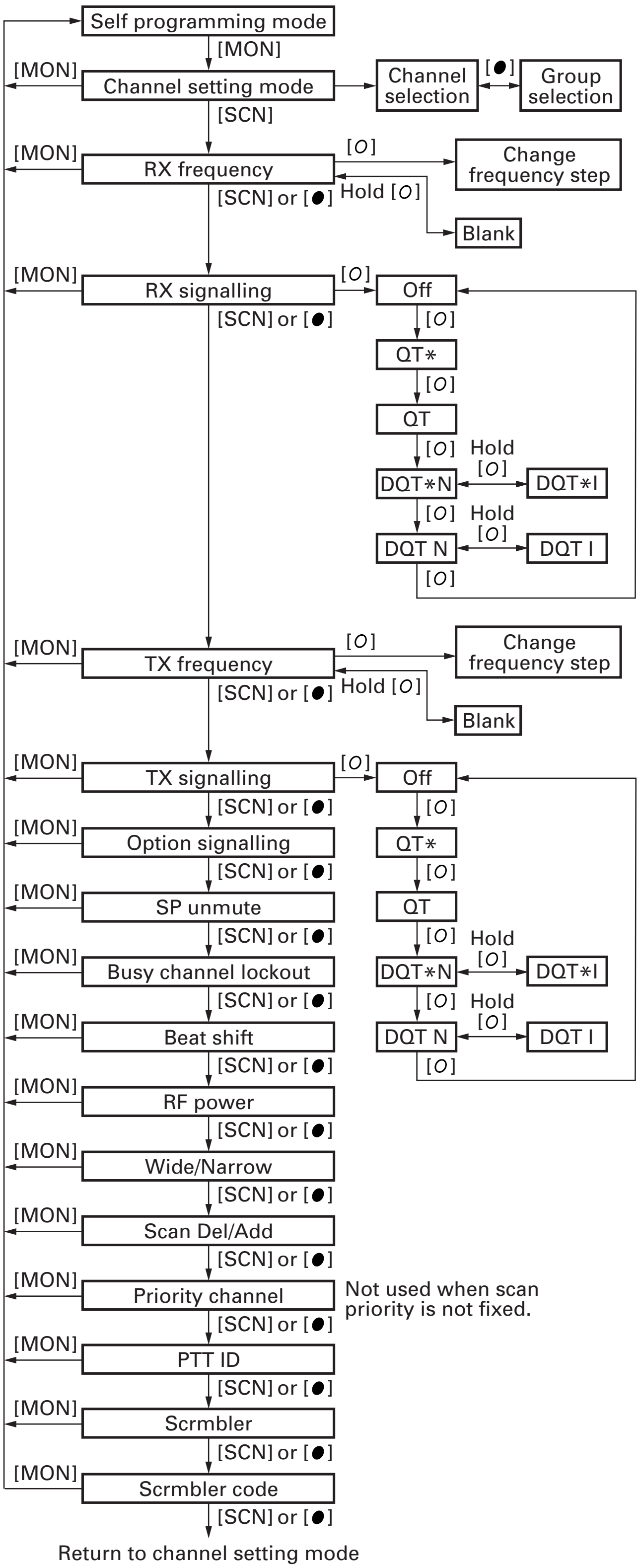
REALIGNMENT

No.	Function	Choices	Display	Remarks
2	RX signalling	Off	- - - - - - - -	O key : Off/QT/DQT switching
		QT 67.0~254.1 (0.1Hz step mode)	QT 67.0✻ QT 254.1✻	
		QT 67.0~250.3 (EIA mode)	QT 67.0 QT 250.3	
		DQT 000~777 Normal (1 step mode)	DQT000N✻ DQT777N✻	
		DQT 023~754 Normal (Standard table mode)	DQT023N DQT754N	
		DQT 000~777 Inverse (1 setp mode)	DQT000I✻ DQT777I✻	O key : Hold 1 second to switch between Normal/Inverse.
		DQT 023~754 Inverse (Standard table mode)	DQT023I DQT754I	
3	TX frequency	Step 2.5kHz~ 1MHz	STP 250 STP 1M	Display when an item is selected or a step is changed (about 0.5 seconds). O key : Select the frequency step
		Blank 100.0000~ 550.0000MHz	T.------- T.150.0000	O key : Hold 1 second to frequency on/blank switching. The right most dot indicates 50Hz digit. (On=5, Off=0)
4	TX signalling	Off	- - - - - - - -	O key : Off/QT/DQT switching
		QT 67.0~254.1 (0.1Hz step mode)	QT 67.0✻ QT 254.1✻	
		QT 67.0~250.3 (EIA mode)	QT 67.0 QT 250.3	
		DQT 000~777 Normal (1 step mode)	DQT000N✻ DQT777N✻	
		DQT 023~754 Normal (Standard table mode)	DQT023N DQT754N	
		DQT 000~777 Inverse (1 setp mode)	DQT000I✻ DQT777I✻	O key : Hold 1 second to switch between Normal/Inverse.
		DQT 023~754 Inverse (Standard table mode)	DQT023I DQT754I	
5	Option signalling	Off	NONE	Default
		DTMF	DTMF	
6	SP unmute	Carrier	S.UM CARR	
		QT/DQT	S.UM QTDQ	Not used when QT/ DQT decode is not set.
		Carrier+DTMF	S.UM C+DT	Not used when option signalling is none.
		QT/DQT+ DTMF	S.UM Q+DT	Not used when option signalling is none.
7	Busy channel lockout	Off	BCL OFF	Default
		Carrier	BCL CARR	
		QT/DQT	BCL QTDQ	If QT/DQT decode is not set, it cannot be selected.
		DTMF	BCL DTMF	If option signalling is set to off, it cannot be selected.
8	Beat	No	SHFT NO	Default
		Yes	SHFT YES	
9	RF power	High power	PWR H	Default
		Low power	PWR L	
10	Wide/ Narrow	Wide	WIDE	Default
		Narrow	NARROW	
11	Scan Del/Add	Delete	SCAN DEL	
		Add	SCAN ADD	Default
12	Priority channel	No	P.CH NO	Default
		Yes	P.CH YES	Not used when scan priority is not fixed.
13	PTT ID	Off	P.ID OFF	Default
		Begin of TX	P.ID BOT	
		End of TX	P.ID EOT	
		Both	P.ID BOTH	
14	Scrambler	Off	SCR OFF	Default
		No	SCR ON	
15	Scrambler code	1~16	SCR 1 SCR 16	Default

- Finish beep will sound when displayed data is stored.
- The settings for scrambler and scrambler code can only be selected when voice scrambler board is installed.

REALIGNMENT

■ Flow Chart

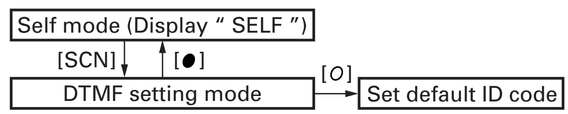


5-4. DTMF Setting Mode

Each radio can be setup in its action mode by using the panel keys.

- Pressing [SCN] when " SELF " is displayed, sets the DTMF setting mode.
- The data displayed using [SCN] is stored in the memory.
- Pressing [●] to without storing it in the memory.
- Press [O] to default status.

■ Flow Chart



The setup items for DTMF setting mode are listed below.

No.	Function	Choices	Display	Remarks
1	ID code	000~ 9999999999 (Code squelch)	I D	Display when an item is selected (about 0.5 seconds).
			1 2 3 4 5 6 7 8	Display of the current setting (If it is 8 or more digits, scroll it).
			– – – – – 9 8 7	Display when a code is input (Input it with DTMF key only).
			– – – – – 0 0 0	O key : Set to default data
		0000~9999 (Selective call) (*1)	I D	Display when an item is selected (about 0.5 seconds).
			– – – – 1 2 3 4 (*1)	Display of the current setting (Input the code with DTMF key only).
			– – – – – 0 0 0 (*1)	O key : Set to default data

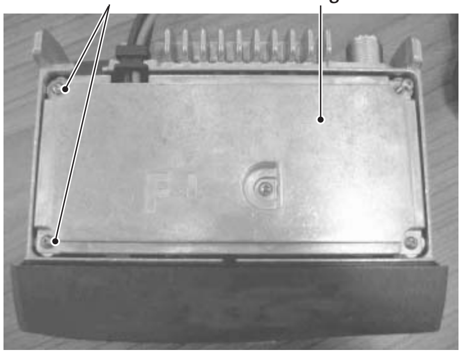
- Finish beep will sound when displayed data is stored.
- (*1) : ID code range is from 3 to 4 digits when selective call is selected.

REALIGNMENT

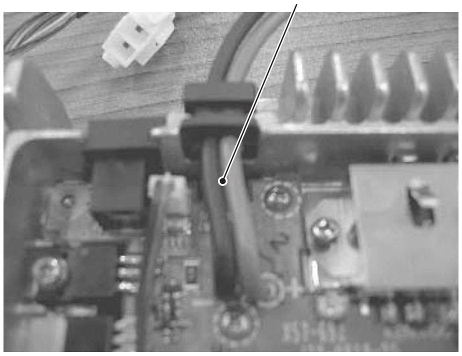
6. Accessory Connection Cable (KCT-39)

The KCT-39 is an accessory connection cable for connecting external equipment. The connector has 15 pins and the necessary signal lines are selected for use.

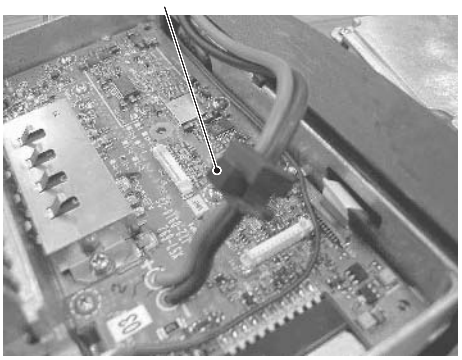
1. Unscrew the five M2.6 screws (N87-2614 -46), then remove the shielding cover (F10-2491-03).



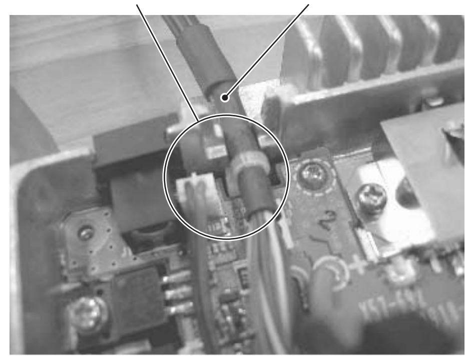
2. Lift the DC cord (E30 -3448 -05) and remove the cushion (G13 -2003 -04) from the chassis.



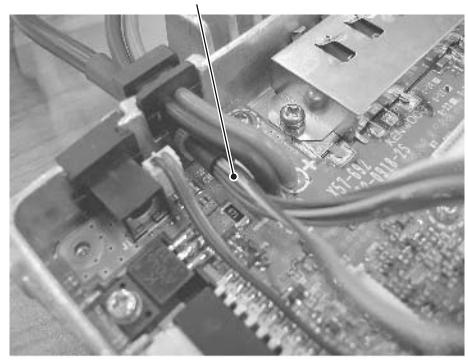
3. Attach a new cushion (G13-1960 -08) to the DC bush.



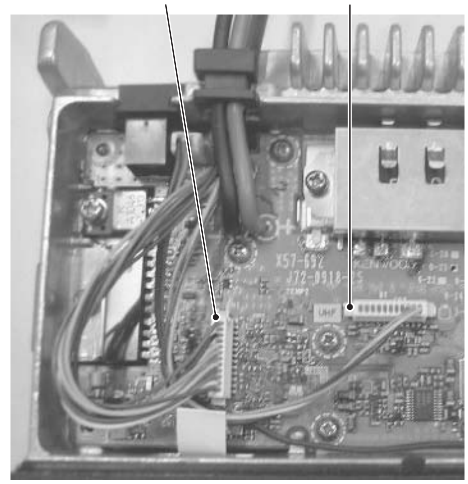
4. Place the KCT-39 sumi tube along the chassis and insert the cable tie into the TX-RX PCB slot, as shown in the diagram below.



5. Align the KCT -39 cable to the left side of the DC cord, then place the DC cord back into its slot along the chassis (over the top of the KCT-39 sumi tube).

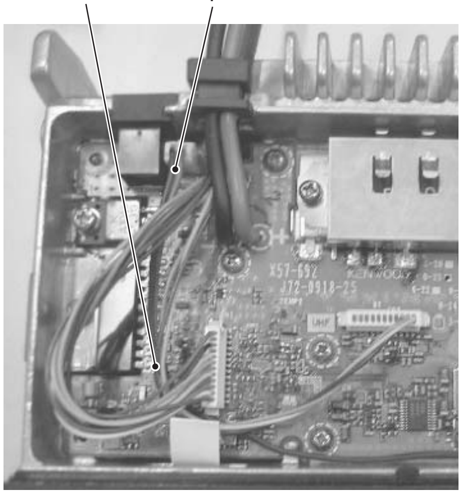


6. Twist the large grouping of wires of the KCT-39 cable twice, then connect it to Terminal A of the PCB.
Connect the remaining grouping of wires of the KCT -39 cable to Terminal B.

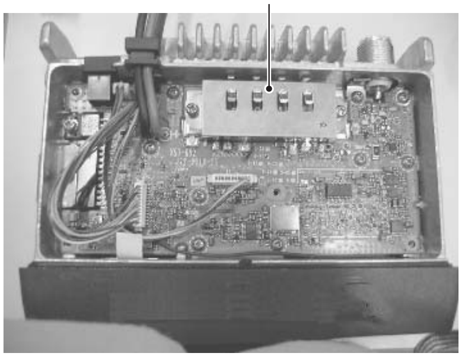


REALIGNMENT

7. Align the terminal B KCT -39 cable underneath the terminal A cable align the speaker cable (T07 -1082 -05) below both KCT-39 cables.

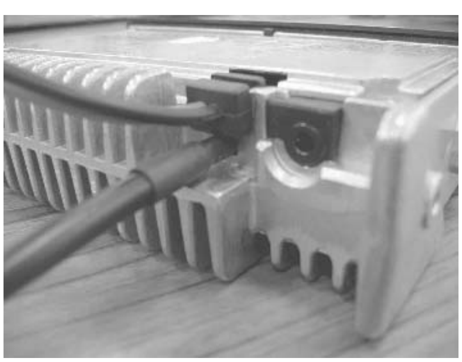


8. Align all cable to the left side so as to avoid the Power Module Area. Mount the shielding cover and secure it with the five M2.6 screws.



9. After everything has been properly mounted, the KCT-39 sumi tube should look similar to that as shown in the diagram below.

Exterior back view of KCT-39



10. Connect the KCT-39 to the external accessory by inserting the crimp terminal (❶) into the square plug (❷), both of which are supplied with the KCT-39.

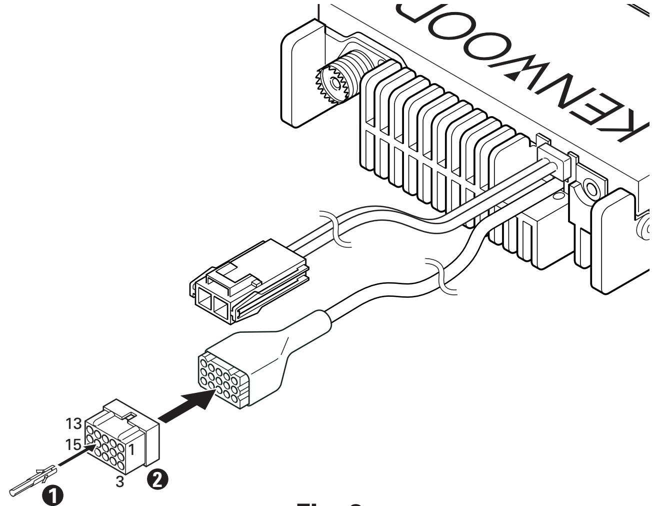
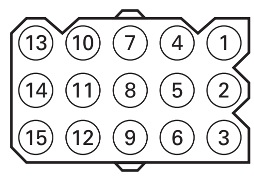


Fig. 3

■ Accessory Port Function



No.	Color	Internal connector	Name
1	Red	CN2-1	SB
2	Pink	CN3-1	IGN
3	Black	CN2-3	GND
4	Brown	CN3-3	DETO
5	Orange	CN3-2	DATAI
6	Yellow	CN2-8	FNC4
7	Green	CN2-7	FNC3
8	Blue	CN2-9	FNC5
9	Purple	CN2-12	FNC8
10	Gray	CN2-10	FNC6
11	White	CN2-11	FNC7
12	NC	NC	
13	NC	NC	
14	Sky blue	CN2-6	FNC2
15	Turquoise	CN2-5	FNC1

REALIGNMENT / INSTALLATION

7. Ignition Sense Cable (KCT-18)

The KCT-18 is an optional cable for enabling the ignition function. The ignition function lets you turn the power to the transceiver on and off with the car ignition key.

7-2. Connecting the KCT-18 to the Transceiver

1. Install the KCT-39 in the transceiver. (See the KCT-39 section)
2. Insert the KCT-18 lead terminal (❶) into pin 2 of the KCT-39 (❷).

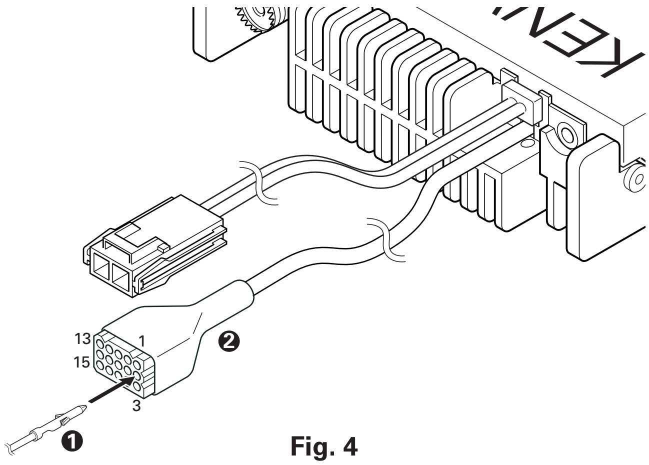


Fig. 4

7-3. Modifying the Transceiver

Modify the transceiver as follows to turn the power on and off with the ignition key.

1. Remove the resistor R71 of the TX-RX unit.

■ Setting With the KPG-80D

Select “External Devices” from the “Edit” menu and enable the “Ignition Sense”.

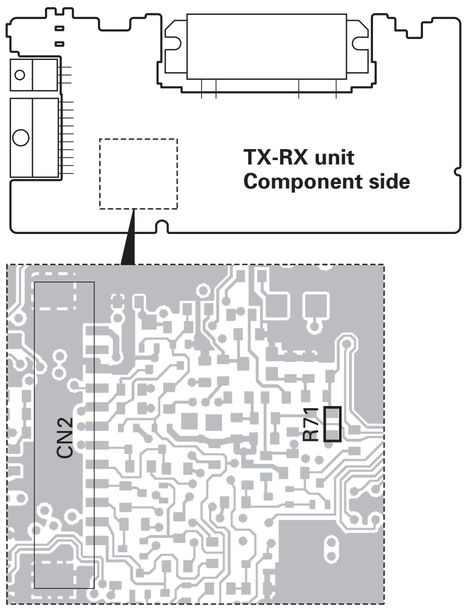


Fig. 5

1. Optional Board

1-1. Voice Scrambler Board Connection

■ Modification

1. Remove the cabinet and shielding cover from the transceiver.
2. Delete R202 and R267 on the TX-RX unit.

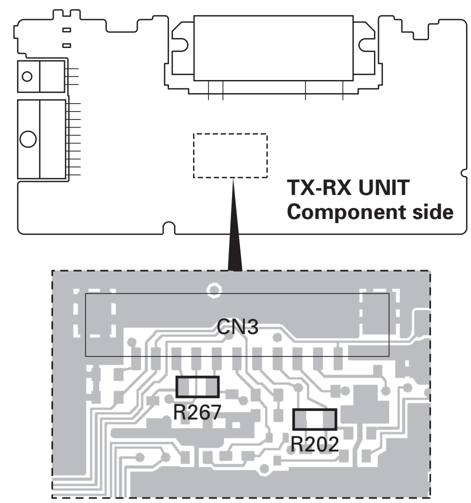


Fig. 1

■ Connection

The functions of pins of CN2 and CN3 on the TX-RX unit are shown in the TERMINAL FUNCTION section (page 50).

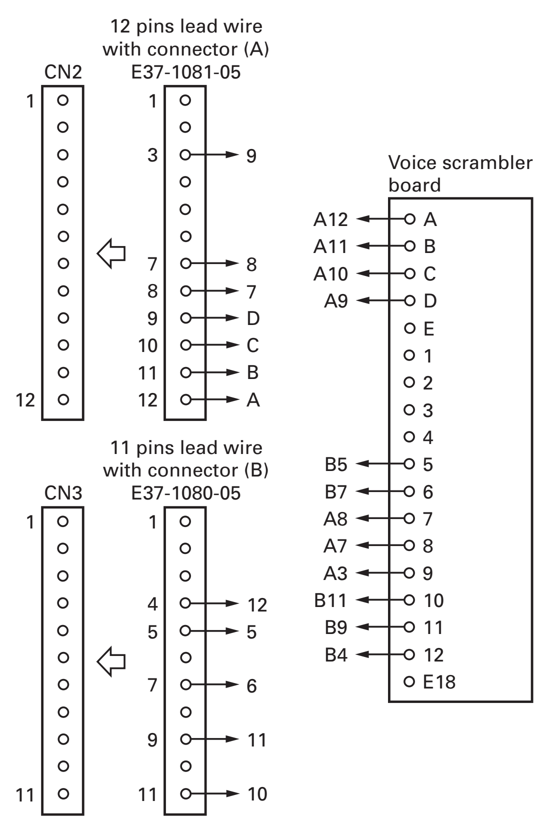


Fig. 2

INSTALLATION

■ Pins Connection

Voice scrambler functions	12 pins lead wire with connector (A)	11 pins lead wire with connector (B)
A	A-12	–
B	A-11	–
C	A-10	–
D	A-9	–
5	–	B-5
6	–	B-7
7	A-8	–
8	A-7	–
9	A-3	–
10	–	B-11
11	–	B-9
12	–	B-4

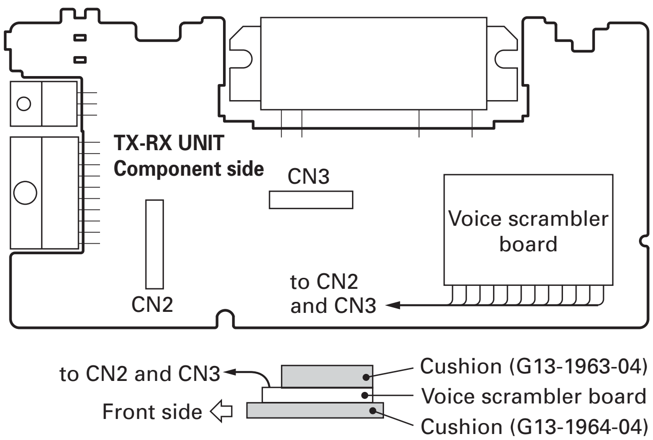


Fig. 3

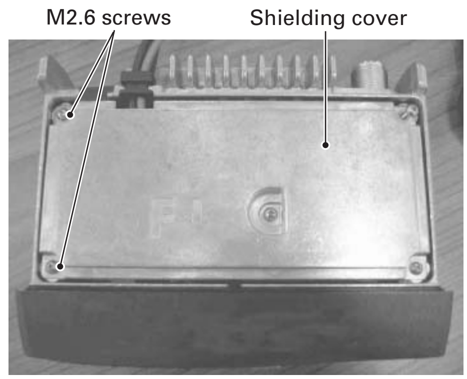
■ Setting With the KPG-80D

Select "External Devices" from the "Edit" menu and set the "Scrambler".

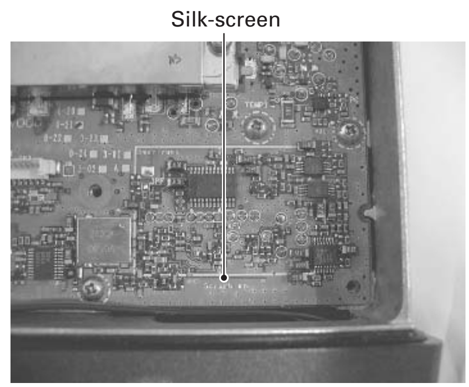
Note :
The voice scrambler board is connected subsequent to the de-emphasis circuit.

2. SmarTrunk

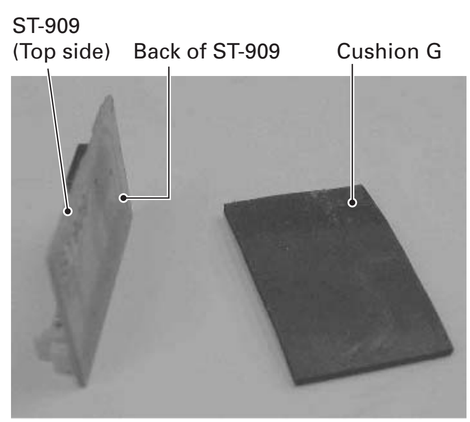
1. Unscrew the five M2.6 screws (N87-2614 -46), then remove the shielding cover (F10-2491-03).



2. The SmarTrunk Board is to be mounted in the silk-screened area.

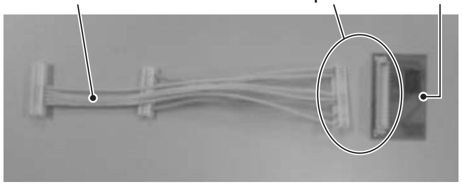


3. Adhere one side of the 27 x 17.5 x 1mm cushion G (G13-2005 -04) to the underside of the ST-909.

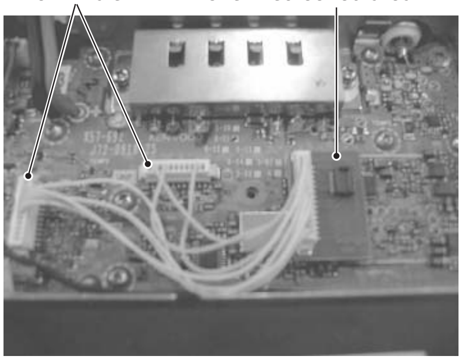


INSTALLATION

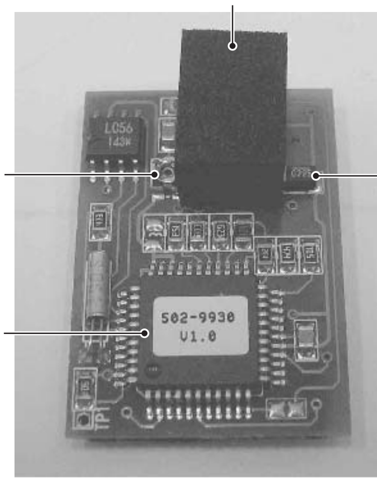
4. Connect the cable (E37 -1117 -05) to the topside of the ST-909.

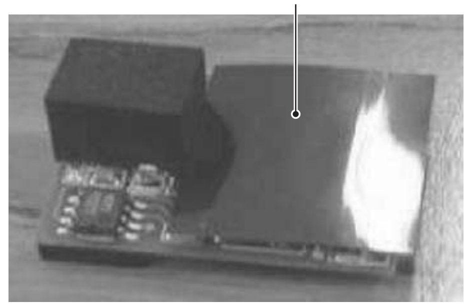


5. Mount the ST-909 onto the TX-RX PCB using the adhesive cushion on the underside of the ST-909, onto the left edge of the silk-screen area. Connect the cables to the two terminals.

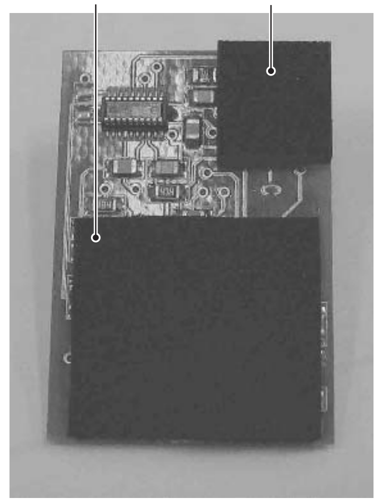


6. Adhere the 13 x 9 x 8 mm cushion F (G13-2006-04) to the top side of the ST-865KW4, between the variable resistor (R18) and the capacitor (C19), then place the supplied insulation sheet over the integrated circuit (IC).





7. Adhere the 10 x 10 x 2.5 mm cushion E (G13-2007 -04) and the supplied 20 x 20 x 1mm cushion C to the underside of the ST-865KW4 as shown in the diagram below.

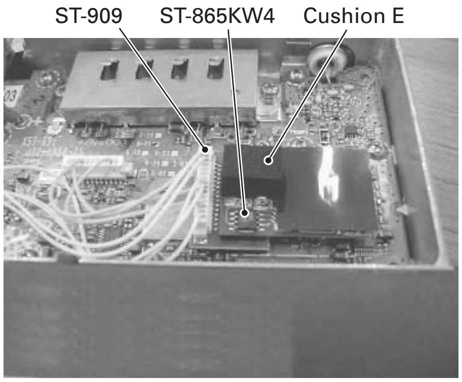


Note :

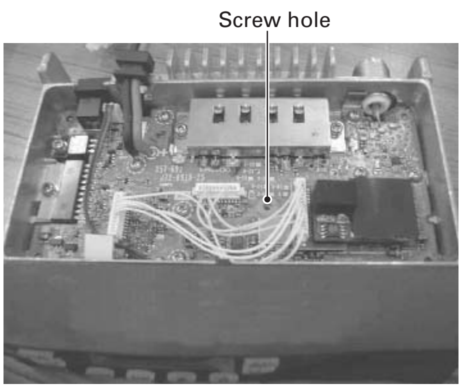
- For the SmarTrunk option, cushion C and the insulation sheet are included in the package.
- For TK-7100 & TK-8100 series, cushion A is not used. Cushion A is replaced by cushion F.
- Cushion B is replaced by cushion E.

INSTALLATION / DISASSEMBLY FOR REPAIR

8. Align the connector on the underside of the ST-865KW4 with the connector on the top side of the ST-909, then press down on cushion E to secure them.



9. Flatten the cable so as to avoid potential damage when mounting the shielding cover. Mount the shielding cover and secure it with the five M2.6 screws.



Note :

- ST-909 and ST-865KW4 are available from SmarTrunk Systems,Inc.

■ Setting With the KPG-80D

Select “External Devices” from the “Edit” menu and set the “SmarTrunk”.

1. When you remove the panel, turn the transceiver up side down. Detach the panel by lifting the tabs as shown below.

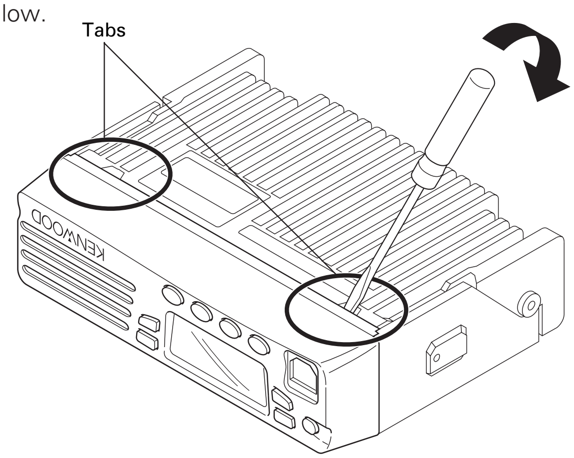


Fig. 1

2. To remove the cabinet, first turn the transceiver up side down. Detach the cabinet by prying the tabs as shown below.

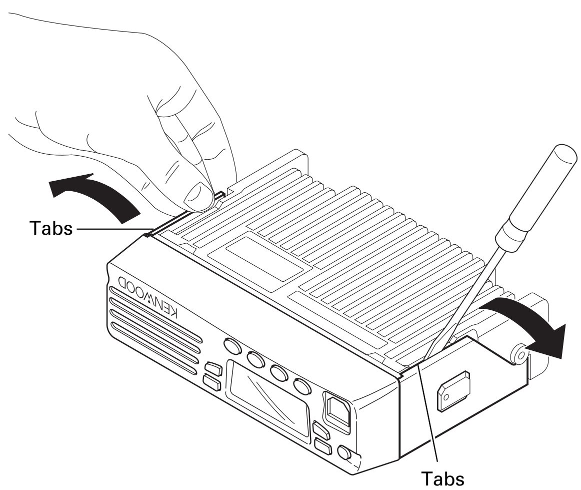


Fig. 2

3. When mounting the front panel, match the 4 tabs of the chassis with the panel, being sure they attach securely.

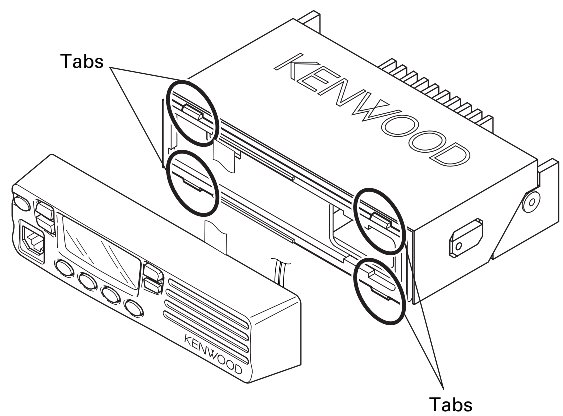


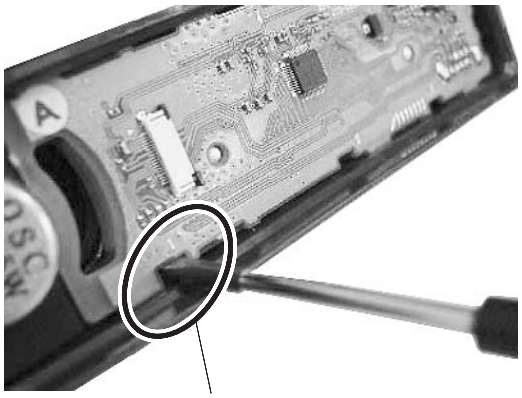
Fig. 3

DISASSEMBLY FOR REPAIR

4-1. Remove the display unit

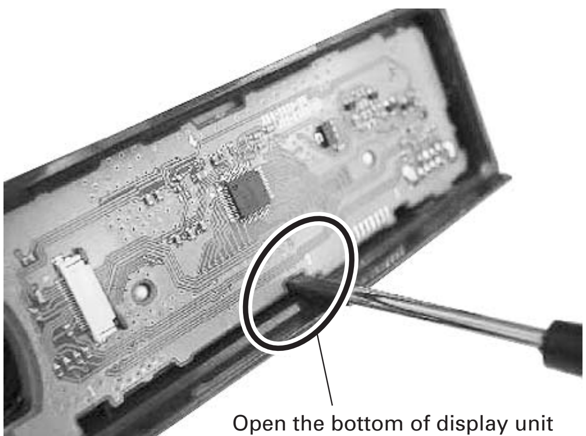
To remove the display unit from the panel, follow the correct procedures shown (A regular screw driver is needed as illustrated).

①



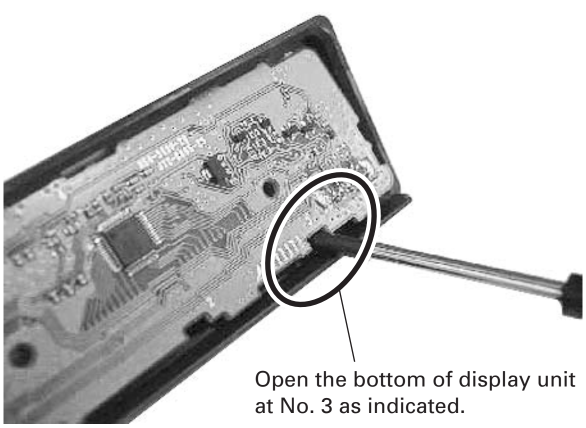
Open the bottom of display unit at No. 1 as indicated.

②



Open the bottom of display unit at No. 2 as indicated.

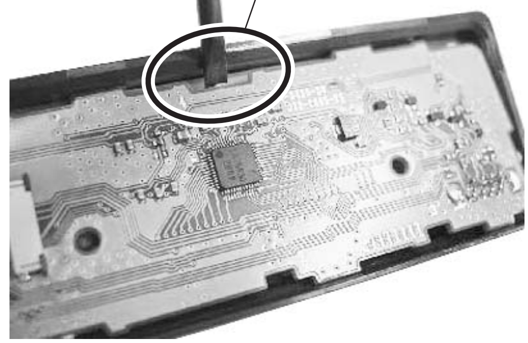
③



Open the bottom of display unit at No. 3 as indicated.

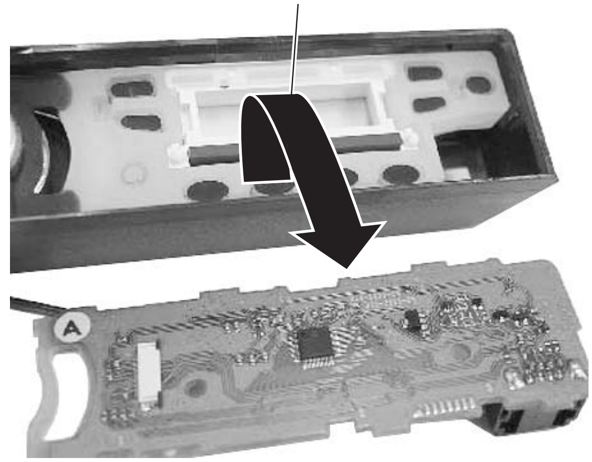
④

Open the top of display unit at No. 4 as indicated.



⑤

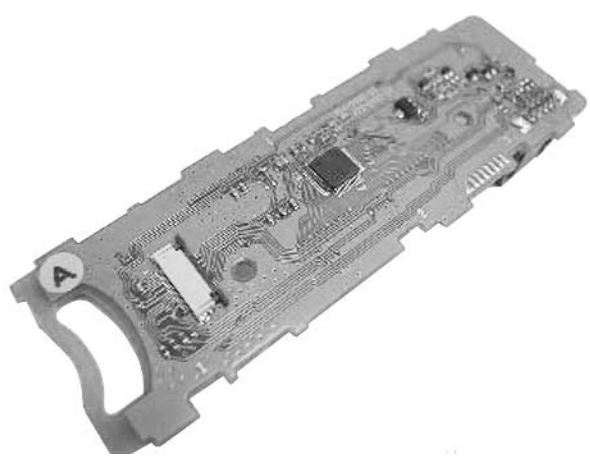
Lift up the display unit and remove.



4-2. Mount the display unit

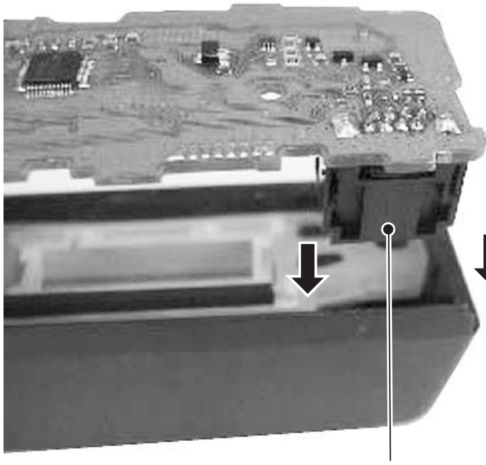
To mount the display unit on the panel, follow the correct procedures shown to ensure easy display unit assembly and good fitting onto the panel.

①



DISASSEMBLY FOR REPAIR

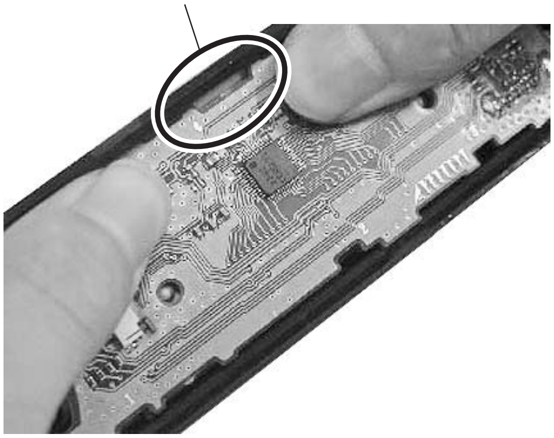
②



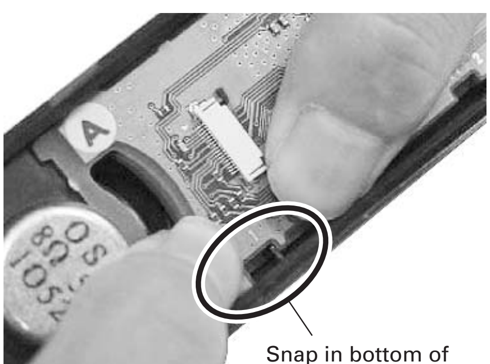
Insert phone jack into panel first.

③

Snap in top of display unit (No. 4).

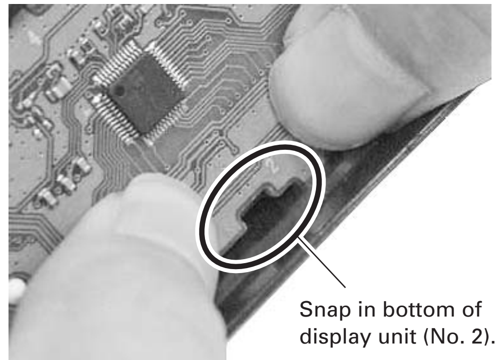


④



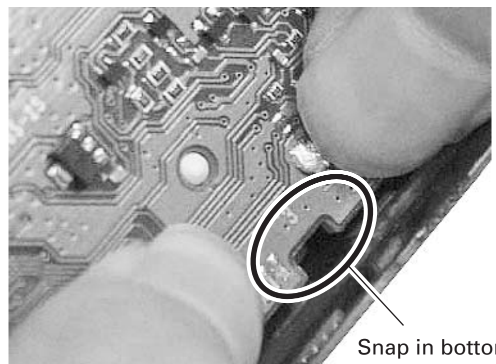
Snap in bottom of display unit (No. 1).

⑤



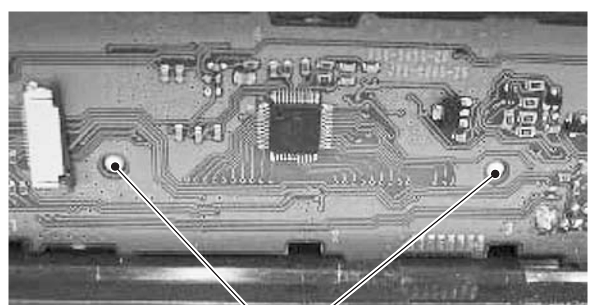
Snap in bottom of display unit (No. 2).

⑥



Snap in bottom of display unit (No. 3).

⑦



Ensure that display unit holes locator is properly located on the illumination guide locators as shown.

CIRCUIT DESCRIPTION

Frequency Configuration

The receiver utilizes double conversion. The first IF is 49.95MHz and the second IF is 450kHz. The first local oscillator signal is supplied from the PLL circuit.

The PLL circuit in the transmitter generates the necessary frequencies. Figure 1 shows the frequencies.

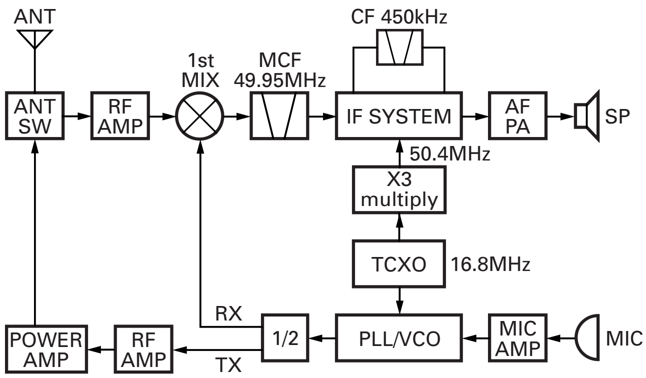


Fig. 1 Frequency configuration

Receiver System

The receiver is double conversion superheterodyne. The frequency configuration is shown in Figure 1.

■ Front-end RF Amplifier

An incoming signal from the antenna is applied to an RF amplifier (Q353) after passing through a transmit/receive switch circuit (D603, D604 are off) and a band pass filter (L357, L356 and varactor diodes : D353, D354). After the signal is amplified (Q353), the signal is filtered through a band pass filter (L354, L355 and varactor diodes: D351, D352) to eliminate unwanted signals before it is passed to the first mixer.

The voltage of these diodes are controlled by tracking the CPU (IC101) center frequency of the band pass filter. (See Fig. 2)

■ First Mixer

The signal from the RF amplifier is heterodyned with the first local oscillator signal from the PLL frequency synthesizer circuit at the first mixer (Q352) to create a 49.95MHz first intermediate frequency (1st IF) signal. The first IF signal is then fed through one pair of monolithic crystal filter (MCF : XF351) to further remove spurious signals.

■ IF Amplifier

The first IF signal is amplified by Q351, and the enters IC301 (FM processing IC). The signal is heterodyned again with a second local oscillator signal within IC301 to create a 450kHz second IF signal. The second IF signal is then fed through a 450kHz ceramic filter (Wide : CF301, Narrow : CF302) to further eliminate unwanted signals before it is amplified and FM detected in IC301.

Item	Rating
Nominal center frequency	49.95MHz
Pass bandwidth	±5.0kHz or more at 3dB
35dB stop bandwidth	±20.0kHz or less
Ripple	1.0dB or less
Insertion loss	5.0dB or less
Guaranteed attenMuation	80dB or more at fo±1MHz
	Spurious : 40dB or more within fo±1MHz
Terminal impedance	350Ω / 5.5pF

Table 1 Crystal filter (L71-0591-05) : XF351

Item	Rating
Nominal center frequency	450kHz
6dB bandwidth	±6.0kHz or more
50dB bandwidth	±12.5kHz or less
Ripple	2.0dB or less
Insertion loss	6.0dB or less
Guaranteed attenuation	35.0dB or more within fo±100kHz
Terminal impedance	2.0kΩ

Table 2 Ceramic filter (L72-0993-05) : CF301

Item	Rating
Nominal center frequency	450kHz
6dB bandwidth	±4.5kHz or more
50dB bandwidth	±10.0kHz or less
Ripple	2.0dB or less
Insertion loss	6.0dB or less
Guaranteed attenuation	60.0dB or more within fo±100kHz
Terminal impedance	2.0kΩ

Table 3 Ceramic filter (L72-0999-05) : CF302

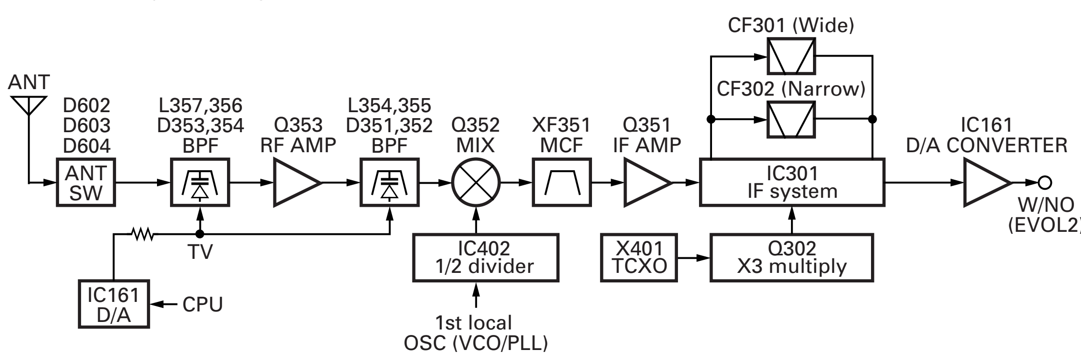


Fig. 2 Receiver system

CIRCUIT DESCRIPTION

■ Wide/Narrow Switching Circuit

The Wide port (pin 65) and Narrow port (pin 64) of the CPU is used to switch between ceramic filters. When the Wide port is high, the ceramic filter SW diodes (D303, D302) cause CF301 to turn on to receive a Wide signal.

When the Narrow port is high, the ceramic filter SW diodes (D303, D302) cause CF302 to turn on to receive a Narrow signal.

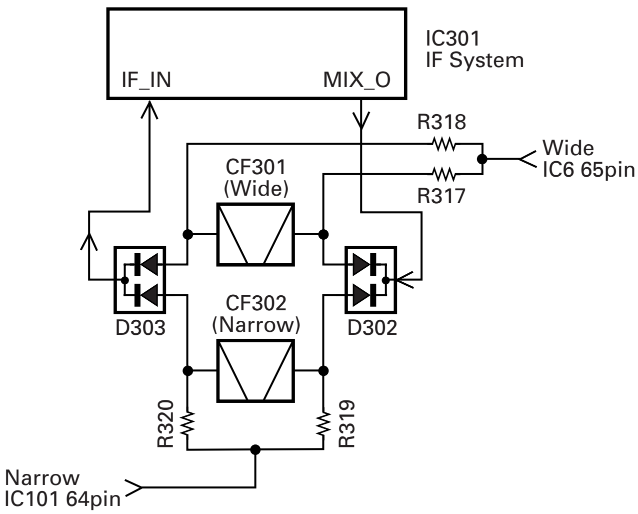


Fig. 3 Wide/Narrow switching circuit

■ AF Signal System

The detection signal from IF IC (IC301) goes to D/A converter (IC161) to adjust the gain and is output to AF filter (IC251) for characterizing the signal. The AF signal output from IC251 and the DTMF signal, BEEP signal are summed and the resulting signal goes to the D/A converter (IC161). The AFO output level is adjusted by the D/A converter. The signal output from the D/A converter is input to the audio power amplifier (IC252). The AF signal from IC252 switches between the internal speaker and speaker jack (J1) output.

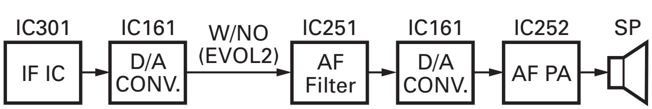


Fig. 4 AF signal system

■ Squelch Circuit

The detection output from the FM IF IC (IC301) passes through a noise amplifier (Q301) to detect noise. A voltage is applied to the CPU (IC101). The CPU controls squelch according to the voltage (SQIN) level. The signal from the RSSI pin of IC301 is monitored. The electric field strength of the receive signal can be known before the SQIN voltage is input to the CPU, and the scan stop speed is improved.

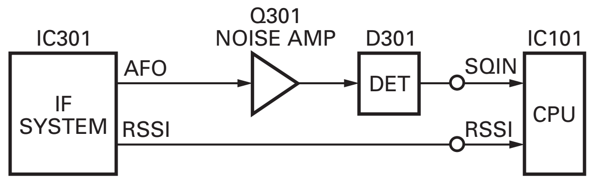


Fig. 5 Squelch circuit

PLL Frequency Synthesizer

The PLL circuit generates the first local oscillator signal for reception and the RF signal for transmission.

■ PLL

The frequency step of the PLL circuit is 5 or 6.25kHz. A 16.8MHz reference oscillator signal is divided at IC401 by a fixed counter to produce the 5 or 6.25kHz reference frequency. The voltage controlled oscillator (VCO) output signal is buffer amplified by Q410, then divided in IC401 by a dual-module programmable counter. The divided signal is compared in phase with the 5 or 6.25kHz reference signal in the phase comparator in IC401. The output signal from the phase comparator is filtered through a low-pass filter and passed to the VCO to control the oscillator frequency. (See Fig. 6)

■ VCO

The operating frequency is generated by Q406 in transmit mode and Q405 in receive mode. The oscillator frequency is controlled by applying the VCO control voltage, obtained from the phase comparator, to the varactor diodes (D405 and D406 in transmit mode and D403 and D404 in receive mode). The TX/RX pin is set low in receive mode causing Q408 and Q407 to turn Q406 off, and turn Q405 on. The TX/RX pin is set high in transmit mode. The outputs from Q405 and Q406 are amplified by Q410 and sent to the RF amplifiers.

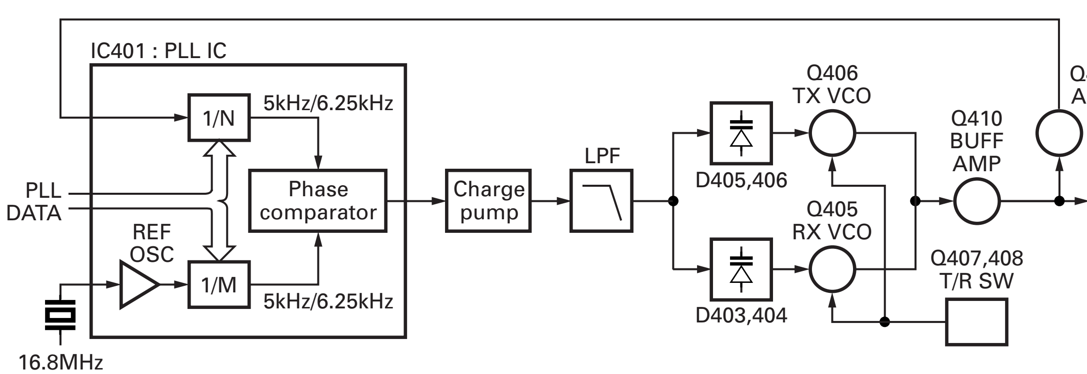


Fig. 6 PLL circuit

CIRCUIT DESCRIPTION

■ Unlock Circuit

During reception, the 8RC signal goes high, the 8TC signal goes low, and Q34 turns on. Q33 turns on and a voltage is applied to the collector (8R). During transmission, the 8RC signal goes low, the 8TC signal goes high and Q36 turns on. Q35 turns on and a voltage is applied to 8T.

The CPU in the control unit monitors the PLL (IC401) LD signal directly. When the PLL is unlocked during transmission, the PLL LD signal goes low. The CPU detects this signal and makes the 8TC signal low. When the 8TC signal goes low, no voltage is applied to 8T, and no signal is transmitted.

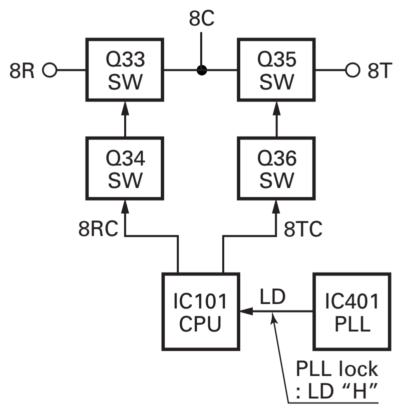


Fig. 7 Unlock circuit

Transmitter System

■ Outline

The transmitter circuit produces and amplifies the desired frequency directly. It FM-modulates the carrier signal by means of a varicap diode.

■ Power Amplifier Circuit

The transmit output signal from the VCO passes through the transmission/reception selection diode (D409) and amplified by Q501 and Q502. The amplified signal goes to the power amplifier (IC502) through a low-pass filter. The low-pass filter removes unwanted high-frequency harmonic components, and the resulting signal is goes the antenna terminal.

■ APC Circuit

The automatic transmission power control (APC) circuit detects the power amplifier (IC502) output with a diode (D606, D607) and applies a voltage to IC501. IC501 compares the APC control voltage (PC) generated by the D/A converter (IC161) and DC amplifier (IC203) with the detection output voltage. IC501 generates the voltage to control IC502 and stabilizes transmission output.

The APC circuit is configured to protect over current of IC502 due to fluctuations of the load at the antenna end and to stabilize transmission output at voltage and temperature variations.

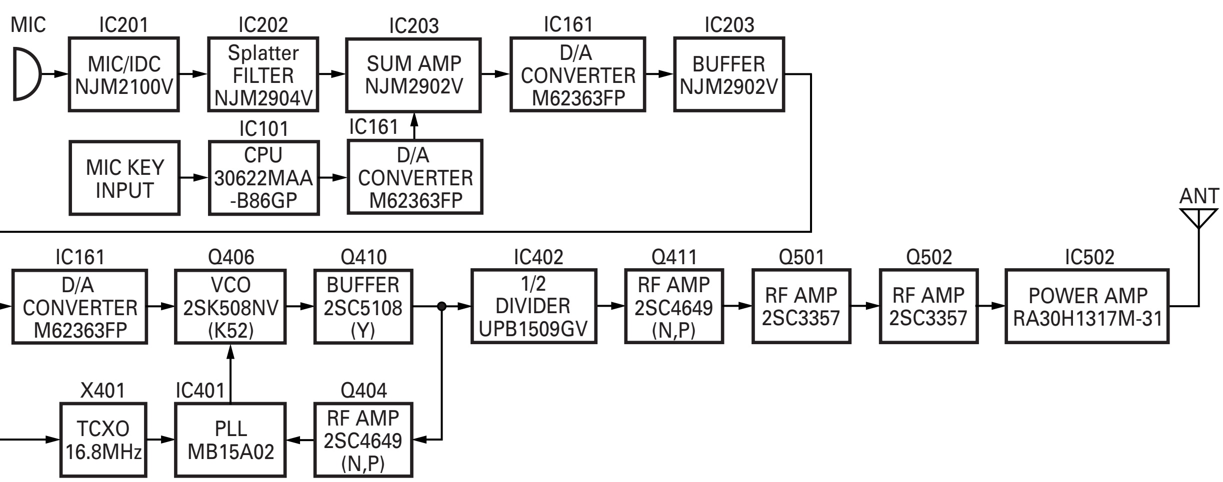


Fig. 8 Transmitter system

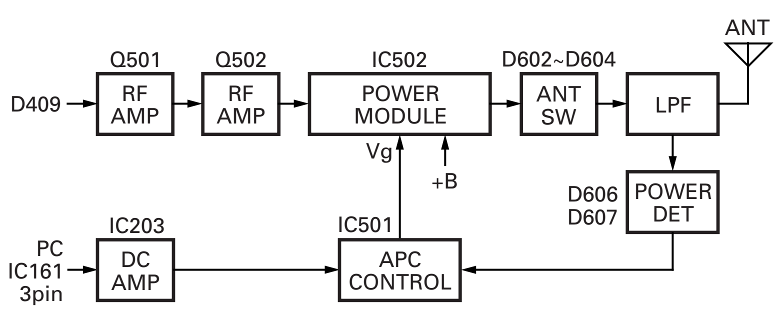


Fig. 9 APC circuit

CIRCUIT DESCRIPTION

Control Circuit

The CPU carries out the following tasks:

1) Controls the WIDE, NARROW, TX/RX outputs.
2) Adjusts the AF signal level of the AF filter (IC251) and turns the filter select compounder on or off.
3) Controls the display unit.
4) Controls the PLL (IC401).
5) Controls the D/A converter (IC161) and adjusts the volume, modulation and transmission power.

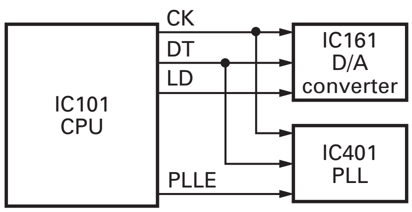


Fig. 10 Control circuit

■ Memory Circuit

The transceiver has a 64k-bit EEPROM (IC66). The EEPROM contains adjustment data. The CPU (IC101) controls the EEPROM through three serial data lines.

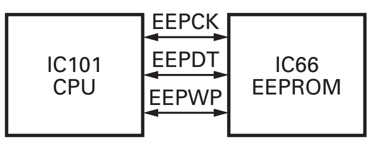


Fig. 11 Memory circuit

■ Display Circuit

The CPU (IC101) controls the display LCD and LEDs. When power is on, the CPU will use the MBL line to control the LCD illumination and key backlight LEDs.

The dimmer function is controlled by the switch Q11. The LCD controller (IC2) controls the functions of the LCD through the CE, CK, DI lines from the CPU.

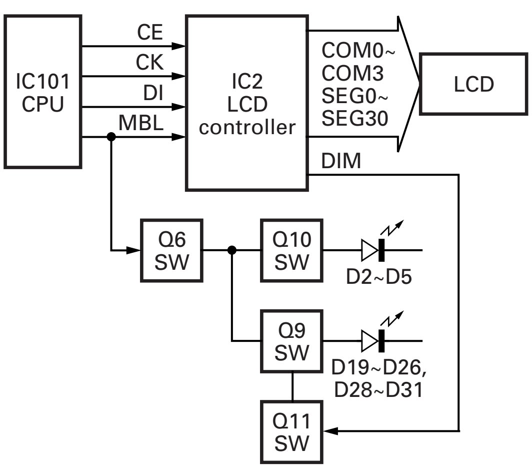


Fig. 12 Display circuit

■ Key Matrix Circuit

The TK-7100 front panel has function keys. Each of them is connected to a cross point of a matrix of the KMI1 to KMO2 ports of the microprocessor. The KMO1 to KMO2 ports are always high, while the KMI1 to KMI4 ports are always low.

The microprocessor monitors the status of the KMI1 to KMO2 ports. If the state of one of the ports changes, the microprocessor assumes that the key at the matrix point corresponding to that port has been pressed.

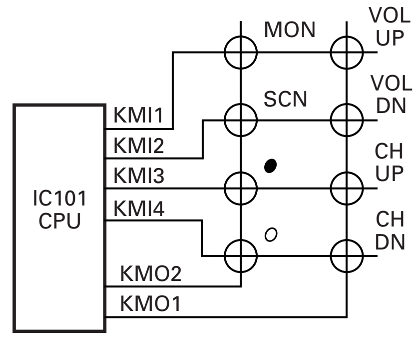


Fig. 13 Key matrix circuit

■ Encode

The QT and DQT signals are output from QT/DQT of the CPU (IC101) and summed with the external pin DI line by the summing amplifier (IC203) and the resulting signal goes to the D/A converter (IC161). The DTMF signal is output from DTMF of the CPU and goes to the D/A converter (IC161). The signal is summed with a MIC signal by the summing amplifier (IC203), and the resulting signal goes to the D/A converter (IC161).

The D/A converter (IC161) adjusts the MO level and the balance between the MO and QT/DQT levels. Part of a QT/DQT signal is summed with MO and the resulting signal goes to the VCOMOD pin of the VCO. This signal is applied to a varicap diode in the VCO for direct FM modulation.

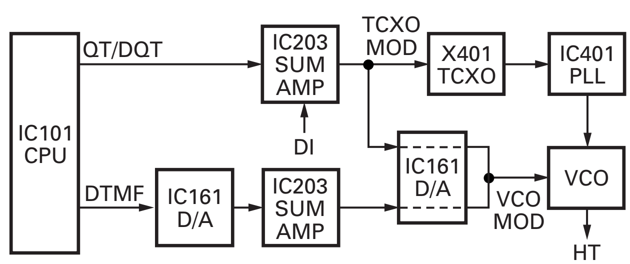


Fig. 14 Encode

CIRCUIT DESCRIPTION

■ Decode

• QT/DQT/DTMF

The signal (W/NO (EVOL2)) goes to SIGNAL (pin 88) of CPU (IC101). The QT/DQT signal will pass through the low-pass filters in the CPU (IC101) and be decoded within the CPU (IC101). The DTMF signal will be decoded within the CPU (IC101).

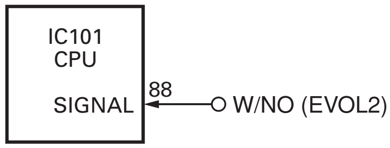


Fig. 15 Decode

■ D/A Converter

The D/A converter (IC161) is used to adjust MO modulation, AF volume, TV voltage, FC reference voltage, and PC POWER CONTROL voltage level.

Adjustment values are sent from the CPU as serial data. The D/A converter has a resolution of 256 and the following relationship is valid:

D/A output = (Vin – VDAref) / 256 x n + VDAref
Vin: Analog input
VDAref: D/A reference voltage
n: Serial data value from the microprocessor (CPU)

Power Supply Circuit

When the power switch on the display unit is pressed, the power port on the display unit which is connected port 17 (POWER), goes low, then port 82 (SBC) goes high, Q32 turns on, SB SW (Q31) turns on and power (SB) is supplied to the radio.

When the DC power supplied to the radio, the voltage regulator IC (IC33) supply into the CPU VDD and reset voltage detect IC (IC34). IC34 will generate signal (RESET) in to the reset terminal on the CPU (IC101) to carry out a power ON reset. Also, CPU (IC101) is checking on port 91 (Battery Voltage). If DC power is less than about 9.5V, the radio is unable to power on.

When the DC power voltage deceases from normal voltage, the INT voltage detector IC (IC35) will set to high on CPU port 18 (INT) if B line will became less than about 9.5V. Then CPU send to EEPROM (IC66) the backup data and go into STOP mode.

This circuit has an overvoltage protection circuit. If a DC voltage of 18V or higher is applied to the base of Q61, this voltage turns Q61 on and turns Q32 and SB off.

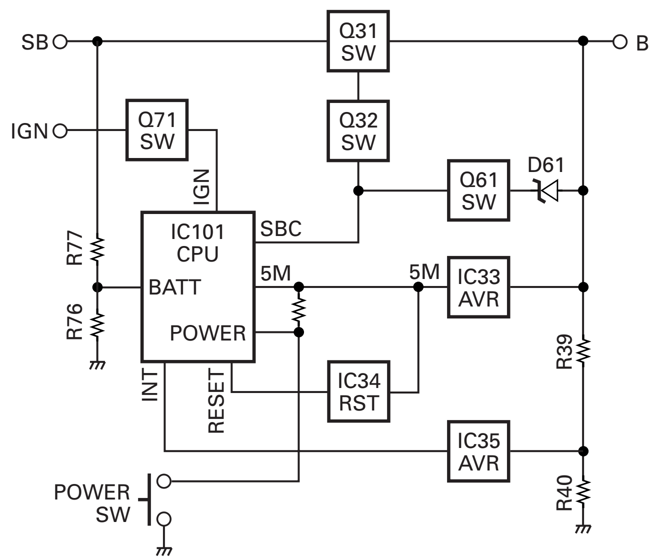


Fig. 16 Power supply circuit

SEMICONDUCTOR DATA

Microprocessor : 30622MAA-B86GP (TX-RX Unit IC101)

■ Terminal Function

Pin No.	Name	I/O	Function
1	QT/DQT	O	QT/DQT output.
2	DTMF/MSK	O	DTMF/MSK/BEEP output
3	PLLE	O	PLL IC chip select.
4,5	NC	I	
6	GND	-	GND.
7	CNVSS	-	CNVss for flash.
8	EVLLD	O	E-volume LD.
9	BSHIFT	O	Beat shift.
10	RESET	-	Reset.
11	XOUT	-	X'tal (14.318MHz).
12	VSS	-	GND.
13	XIN	-	X'tal (14.318MHz).
14	VCC	-	+5V.
15	GND	-	GND (Input only).
16	NC	I	
17	POWER	I	Power key input.
18	INT	I	µcom stop.
19	NC	I	
20	TX/RX	O	TX/RX.
21	UL	O	PLL unlock detect.
22~25	NC	I	
26	EEPWP	O	EEPROM write protect
27	EEPCK	O	EEPROM clock (N ch open drain).
28	EEPDT	I/O	EEPROM data (N ch open drain).
29	FNC1	I/O	Function P1/TxD for flash.
30	FNC2	I/O	Function P2/RxD for flash.
31	CLKFLS	I	SCLK for flash.
32	BSYFLS	O	Busy for flash.
33	TXD	O	To FPU.
34	RXD	I	From FPU.
35	PTT	I	PTT key.
36	HOOK	I	Hook.
37,38	NC	I	
39	EMPFLS	I/O	EPM for flash.
40~42	NC	I	
43	FNC3	I/O	Function port 3.
44	CEFLS	I/O	CE for flash.
45,46	FNC4, FNC5	I/O	Function port 4, 5
47,48	FNC7, FNC6	I/O	Function port 7, 6.
49	FNC8	I/O	Function port 8.
50	AFM	O	AF mute.
51	SPM	O	Speaker mute.

Pin No.	Name	I/O	Function
52	AMPSW	O	AF AMP switch.
53	DT	O	Common data.
54	CK	O	Common clock.
55,56	NC	I	
57~59	DST1~DST3	I	Destination 1~3
60	VCC	-	+5V.
61	NC	I	
62	VSS	-	GND.
63	NC	I	
64	NARROW	O	
65	WIDE	O	
66~68	NC	I	
69	CL	O	Clock for LCD.
70	CE	O	Chip enable for LCD.
71	DI	O	Transfer data to LCD.
72	IGN	I	Ignition.
73	MICMT1	O	Mic 1 mute.
74	MICEM	O	Mic 2 mute.
75	MICMT2	O	Mic 3 mute.
76	8RC	O	8R control.
77	8TC	O	8T control.
78	CM	I/O	Mic key check.
79~81	NC	I	
82	SBC	O	Battery switch.
83	KMI2	I	Key matrix 2.
84	KMI1	I	Key matrix 1.
85	KMI3	I	Key matrix 3.
86	KMI4	I	Key matrix 4.
87	NC	I	
88	SIGNAL	I	DTMF/QT/DQT input.
89	TEMP2	I	Temperature 2.
90	TEMP1	I	Temperature 1.
91	BATT	I	Battery voltage.
92	RSSI	I	RSSI input.
93	SQIN	I	Squelch input.
94	AVSS	-	GND.
95	NC	I	
96	VREF	-	+5V.
97	AVCC	-	+5V.
98	NC	I	
99	KMO1	O	Key matrix output 1.
100	KMO2	O	Key matrix output 2.

COMPONENTS DESCRIPTION

Display Unit (X54-3430-20)

Ref. No.	Parts name	Description
IC2	IC	LCD controller
Q6	Transistor	DC switch
Q9	Transistor	LCD backlit switch
Q10	Transistor	Key backlit switch
Q11	Transistor	Dimmer function switch
D2~5	LED	Key & LCD backlit
D17	Diode	DC switch
D18	Diode	DC controller
D19~26	LED	Key & LCD backlit
D27	Diode	Surge absorption
D28~31	LED	Key & LCD backlit

TX-RX Unit (X57-6910-XX)

Ref. No.	Parts name	Description
IC31	IC	Voltage regulator (8C)
IC32	IC	Voltage regulator (5C)
IC33	IC	Voltage regulator (5M)
IC34	IC	Voltage detector reset
IC35	IC	Voltage detector int
IC66	IC	EEPROM
IC101	IC	CPU
IC161	IC	Digital potentiometer
IC201	IC	MIC amplifier / IDC
IC202	IC	MIC amplifier / Splatter filter
IC203	IC	Buffer amplifier / SUM amplifier / DC amplifier / 1/2 Vcc
IC251	IC	Audio filter
IC252	IC	Audio amplifier
IC301	IC	FM demodulation
IC401	IC	PLL synthesizer
IC402	IC	Divider (Hetero)
IC501	IC	APC controller
IC502	IC	Power module
Q1	FET	TX AF
Q31	Transistor	DC switch (SB) / Active when power is on
Q32	FET	DC switch (SB) / Active when power is on
Q33,34	Transistor	DC switch (8R) / Active while RX
Q35,36	Transistor	DC switch (8T) / Active while TX
Q61	Transistor	Over voltage detection / Active when PS voltage is more than 18V
Q71	Transistor	Ignition / Ignition sens
Q86,87	Transistor	Beat shift / Active while beat shift is on
Q201	Transistor	AF amplifier / MIC mute / Emergency MIC mute
Q202	FET	Emergency MIC mute / Active when MICEM is H
Q251	Transistor	Buffer amplifier / RX audio
Q252,253	FET	AF mute / Active while AFM is H
Q254	Digital transistor	AF mute / Active while SPM is H
Q255	Transistor	AF mute / Active while AMPSW is H
Q301	Transistor	Noise amplifier / SQL amplifier
Q302	Transistor	Buffer amplifier / 16.8MHz 3rd over tone
Q351	Transistor	IF amplifier
Q352	FET	Mixer
Q353	FET	RF amplifier / LNA
Q354	Transistor	PC/TV SW
Q402,403	Transistor	Charge pump
Q404	Transistor	RF amplifier / PLL F in
Q405	FET	RX VCO
Q406	FET	TX VCO
Q407	FET	T/R switch
Q408	Transistor	T/R switch
Q410	Transistor	Buffer amplifier / Output of VCO
Q411	Transistor	RF amplifier / Output of VCO
Q440	Transistor	Lipple filter
Q501,502	Transistor	RF amplifier
D1	Diode	Surge absorption / CM
D2	Diode	Surge absorption / HOOK
D3	Diode	Surge absorption / PTT
D4~11	Diode	Surge absorption / FNC1~8
D31	Diode	Reverse connection protection
D32	Poly switch	Current protection
D61	Diode	Over voltage detection
D201	Diode	OR gate / MIC mute, AGC
D202	Diode	AGC
D251	Diode	Limiter
D301	Diode	Detection
D302,303	Diode	IF switch (Wide/Narrow)
D351~354	Varicap	RF BPF tuning
D401	Diode	Lipple filter
D402	Diode	Voltage dropped
D403,404	Varicap	RX VCO
D405,406	Varicap	TX VCO
D407	Varicap	Modulation
D408	Diode	Lipple filter
D409	Diode	RF switch (TX/RX)
D501,502	Diode	Temperature compensation
D503	Diode	Voltage protection
D602~604	Diode	ANT switch
D606,607	Diode	APC voltage detect
D608,609	Diode	Temperature compensation

PARTS LIST

✻ New Parts. ⚠ indicates safety critical components.
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia **K** : USA **P** : Canada
Y : PX (Far East, Hawaii) **T** : England **E** : Europe
Y : AAFES (Europe) **X** : Australia **M** : Other Areas

TK-7100, DISPLAY UNIT (X54-3430-20)
TX-RX UNIT (X57-6910-XX)

TK-7100

Ref. No.	Address	New parts	Parts No.	Description	Destination
1	1B		A01-2178-02	CABINET	
2	3B	✻	A10-4080-01	CHASSIS	
3	3A		A62-1074-03	PANEL ASSY	
5	3A		B11-1299-02	ILLUMINATION GUIDE (LCD)	
6	3A		B38-0878-05	LCD	
7	2C	✻	B62-1778-00	INSTRUCTION MANUAL	
7	2C	✻	B62-1779-00	INSTRUCTION MANUAL	M2,K
8	3B	✻	B72-2235-04	MODEL NAME PLATE	M
8	3B	✻	B72-2236-04	MODEL NAME PLATE	M2
8	3B	✻	B72-2237-04	MODEL NAME PLATE	K
10	3B		E04-0167-05	RF COAXIAL PECEPTACLE (M)	
11	3A	✻	E29-1197-15	INTER CONNECTOR (LCD)	
12	1C		E30-3339-05	DC CORD ACCESSORY	
13	2B		E30-3448-05	DC CORD (RADIO)	
14	3A		E37-0962-05	SPEAKER CABLE	
15	2A		E37-1041-05	FLAT CABLE (TX/RX-DISPLAY)	
-			E37-1080-05	PROCESSED CABLE (B)	
-			E37-1081-05	PROCESSED CABLE (A)	
-		✻	E37-1117-05	PROCESSED CABLE	
20	2B		F10-2414-03	SHIELDING PLATE (POWER MODULE)	
21	2B	✻	F10-2491-02	SHIELDING COVER (TX/RX)	
22	2B	✻	F10-2498-03	SHIELDING CASE (POWER MODULE)	
23	1C		F51-0016-05	FUSE (6✻30) ACCESSORY	
25	2B		G02-0887-03	EARTH SPRING (ANTENNA TERMINAL)	
26	2B		G10-0792-14	FIBROUS SHEET (POWER MODULE)	
-		✻	G13-1963-04	CUSHION	
-		✻	G13-1964-04	CUSHION	
30	3B	✻	G13-2003-04	CUSHION (DC CORD)	
-		✻	G13-2005-04	CUSHION (G)	
-		✻	G13-2006-04	CUSHION (F)	
-		✻	G13-2007-04	CUSHION (E)	
34	1B		G53-1524-02	PACKING (CABINET)	
35	3B		G53-1525-03	PACKING (PANEL)	
36	2B		G53-1542-03	PACKING	
38	1C		H02-0617-02	INNER PACKING CASE	
39	2D		H10-6636-13	POLYSTYRENE FOAMED FIXTURE	
40	3C		H10-6639-03	POLYSTYRENE FOAMED FIXTURE	
41	1C		H25-0103-04	PROTECTION BAG (125/250/0.07)	
42	2D		H25-2320-04	PROTECTION BAG	
43	3D		H52-1699-12	ITEM CARTON CASE	M
43	D	✻	H52-2032-02	ITEM CARTON CASE	M2,K
45	1C		J19-1584-05	MIC HOLDER ACCESSORY	K
46	1D		J29-0662-03	BRACKET ACCESSORY	
48	3A		K29-9262-01	KEY TOP	
A	2B		N67-3008-46	PAN HEAD SEMS SCREW W	
B	2B,3B		N87-2606-46	BRAZIER HEAD TAPTITE SCREW	
C	1B,2B		N87-2614-46	BRAZIER HEAD TAPTITE SCREW	
50	1C		N99-0395-05	SCREW SET ACCESSORY	
52	3A		T07-0739-05	SPEAKER	
53	1D		T91-0624-05	MICROPHONE ACCESSORY	K

DISPLAY UNIT (X54-3430-20)

Ref. No.	Address	New parts	Parts No.	Description	Destination
D2-5			B30-2205-05	LED (YG)	
D19-26			B30-2205-05	LED (YG)	
D28-31			B30-2205-05	LED (YG)	
C4			CC73GCH1H101J	CHIP C 100PF J	
C6			CK73GB1H103K	CHIP C 0.010UF K	
C15,16			CC73GCH1H101J	CHIP C 100PF J	
C18			CK73FB1A105K	CHIP C 1.0UF K	
C19			CK73GB1H681K	CHIP C 680PF K	
C22,23			CK73GB1H102K	CHIP C 1000PF K	
C24			CK73GB1H103K	CHIP C 0.010UF K	
C25			CK73GB1H102K	CHIP C 1000PF K	
C27,28			CK73GB1H102K	CHIP C 1000PF K	
C30			CK73GB1H103K	CHIP C 0.010UF K	
C31-33			CK73GB1H102K	CHIP C 1000PF K	
CN1			E40-6005-05	FLAT CABLE CONNECTOR	
J1			E08-0877-05	MODULAR JACK	
L1			L92-0138-05	FERRITE CHIP	
CP1			R90-0724-05	MULTI-COMP 1K X4	
R4-9			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R10,11			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R21-23			RK73GB1J103J	CHIP R 10K J 1/16W	
R24			RK73GB1J474J	CHIP R 470K J 1/16W	
R25			RK73GB1J473J	CHIP R 47K J 1/16W	
R26			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R33			RK73FB2A560J	CHIP R 56 J 1/10W	
R34			RK73GB1J101J	CHIP R 100 J 1/16W	
R36			RK73FB2A560J	CHIP R 56 J 1/10W	
R37			RK73GB1J100J	CHIP R 10 J 1/16W	
R38,39			RK73FB2A390J	CHIP R 39 J 1/10W	
R40			RK73FB2A473J	CHIP R 47K J 1/10W	
D17			MA2S111	DIODE	
D18			DA204U	DIODE	
D27			DA221	DIODE	
IC2			LC75834W	MOS IC	
Q6			KRC102S	DIGITAL TRANSISTOR	
Q9			2SB1132(Q,R)	TRANSISTOR	
Q10			KRA225S	DIGITAL TRANSISTOR	
Q11			RN47A4	TRANSISTOR	

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2

Ref. No.	Address	New parts	Parts No.	Description	Destination
C10			CK73GB1H102K	CHIP C 1000PF K	
C13-23			CK73GB1H471K	CHIP C 470PF K	
C26-28			CK73GB1H221K	CHIP C 220PF K	
C29			CK73GB1H471K	CHIP C 470PF K	
C30			CK73GB1H102K	CHIP C 1000PF K	
C33			CK73GB1H102K	CHIP C 1000PF K	
C34			C92-0721-05	ELECTRO 330UF 25WV	
C35-38			CK73GB1H102K	CHIP C 1000PF K	
C39,40			CK73GB1C104K	CHIP C 0.10UF K	
C41			C92-0795-05	CHIP-TAN 22UF 10WV	

K : TK-7100 K M : TK-7100 M M2 : TK-7100 M2

PARTS LIST

TX-RX UNIT (X57-6910-XX)

Ref. No.	Address	New parts	Parts No.	Description			Desti-nation
C42			CK73GB1H103K	CHIP C	0.010UF	K	
C43-45			C92-0795-05	CHIP-TAN	22UF	10WV	
C48			CK73GB1A105K	CHIP C	1.0UF	K	
C49,50			CK73GB1H103K	CHIP C	0.010UF	K	
C51			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C52,53			CK73GB1H102K	CHIP C	1000PF	K	
C54,55			CK73GB1C104K	CHIP C	0.10UF	K	
C56			CK73GB1H102K	CHIP C	1000PF	K	
C61			CK73GB1H102K	CHIP C	1000PF	K	
C66			CK73GB1H102K	CHIP C	1000PF	K	
C72			CK73GB1H102K	CHIP C	1000PF	K	
C77,78			CK73GB1H102K	CHIP C	1000PF	K	
C82			CK73GB1H102K	CHIP C	1000PF	K	
C83			CK73GB1C104K	CHIP C	0.10UF	K	
C87			CC73GCH1H180J	CHIP C	18PF	J	
C88,89			CC73GCH1H060B	CHIP C	6.0PF	B	
C90			CC73GCH1H180J	CHIP C	18PF	J	
C97,98			CK73GB1H102K	CHIP C	1000PF	K	
C101			CK73GB1H102K	CHIP C	1000PF	K	
C102			CK73GB1C104K	CHIP C	0.10UF	K	
C103			CK73GB1H102K	CHIP C	1000PF	K	
C104			CK73GB1C104K	CHIP C	0.10UF	K	
C151			CK73GB1H182K	CHIP C	1800PF	K	
C152			CK73GB1H392K	CHIP C	3900PF	K	
C161			CK73GB1H102K	CHIP C	1000PF	K	
C162			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C163			CK73GB1H102K	CHIP C	1000PF	K	
C164			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C201			CK73GB1C104K	CHIP C	0.10UF	K	
C202			CK73GB1H102K	CHIP C	1000PF	K	
C203			CK73GB1C273K	CHIP C	0.027UF	K	
C204			C92-0514-05	CHIP-TAN	2.2UF	10WV	
C205			CK73GB1C104K	CHIP C	0.10UF	K	
C206			CK73GB1H102K	CHIP C	1000PF	K	
C207			CK73GB1C223K	CHIP C	0.022UF	K	
C208			CK73GB1H103K	CHIP C	0.010UF	K	
C210			CK73GB1C104K	CHIP C	0.10UF	K	
C211			CK73GB1H821K	CHIP C	820PF	K	
C212			CK73GB1H122K	CHIP C	1200PF	K	
C213			CK73GB1H332K	CHIP C	3300PF	K	
C214			CC73GCH1H151J	CHIP C	150PF	J	
C215			CK73GB1C104K	CHIP C	0.10UF	K	
C217,218			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C220			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C221			CK73GB1C104K	CHIP C	0.10UF	K	
C225			C92-0004-05	CHIP-TAN	1.0UF	16WV	
C226			CK73GB1H472K	CHIP C	4700PF	K	
C227			CK73GB1E103K	CHIP C	0.010UF	K	
C228			C92-0560-05	CHIP-TAN	10UF	6.3WV	
C229			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C230			CK73GB1C104K	CHIP C	0.10UF	K	
C231,232			CK73GB1H102K	CHIP C	1000PF	K	
C233			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C250			CK73GB1C104K	CHIP C	0.10UF	K	
C251			C92-0714-05	CHIP-TAN	4.7UF	6.3WV	
C252			CC73GCH1H390J	CHIP C	39PF	J	
C253,254			CK73GB1A105K	CHIP C	1.0UF	K	
C255			CK73GB1H822K	CHIP C	8200PF	K	
C256			CK73GB1E183K	CHIP C	0.018UF	K	
C257			CK73GB1C393K	CHIP C	0.039UF	K	
C258-261			CK73GB1H103J	CHIP C	0.010UF	J	
C262			CK73GB1H102K	CHIP C	1000PF	K	
C263,264			CK73GB1C333K	CHIP C	0.033UF	K	
C265,266			CK73GB1C104K	CHIP C	0.10UF	K	
C267			CK73GB1A474K	CHIP C	0.47UF	K	
C268			CK73GB1C104K	CHIP C	0.10UF	K	
C269			CK73GB1A105K	CHIP C	1.0UF	K	
C270			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C271			CK73GB1H332K	CHIP C	3300PF	K	
C272			CK73GB1H102K	CHIP C	1000PF	K	
C273			CK73GB1A105K	CHIP C	1.0UF	K	
C274			CK73FB1C224K	CHIP C	0.22UF	K	
C275			CK73GB1A105K	CHIP C	1.0UF	K	
C276,277			CK73GB1H102K	CHIP C	1000PF	K	
C278			CK73GB1C104K	CHIP C	0.10UF	K	
C279			C92-0516-05	CHIP-TAN	4.7UF	16WV	
C280			C92-0040-05	CHIP-ELE	47UF	16WV	
C281			CK73GB1H102K	CHIP C	1000PF	K	
C282			C92-0722-05	ELECTRO	470UF	16WV	
C283			CK73GB1H102K	CHIP C	1000PF	K	
C301			C92-0507-05	CHIP-TAN	4.7UF	6.3WV	
C302			CK73GB1H102K	CHIP C	1000PF	K	
C303			CK73GB1H472K	CHIP C	4700PF	K	
C304,305			CC73GCH1H331J	CHIP C	330PF	J	M,K
C304,305			CC73GCH1H391J	CHIP C	390PF	J	M2
C306			CK73GB1H102K	CHIP C	1000PF	K	
C307			CK73GB1E223K	CHIP C	0.022UF	K	
C308			CK73GB1H102K	CHIP C	1000PF	K	
C309			CK73GB1E223K	CHIP C	0.022UF	K	
C310			CK73FB1C334K	CHIP C	0.33UF	K	
C311,312			CK73GB1C104K	CHIP C	0.10UF	K	
C313			C92-0662-05	CHIP-TAN	15UF	6.3WV	
C314			CK73GB1H103K	CHIP C	0.010UF	K	
C315-318			CK73GB1C104K	CHIP C	0.10UF	K	
C319			CC73GCH1H101J	CHIP C	100PF	J	
C322			CC73GCH1H560J	CHIP C	56PF	J	
C323			CC73GCH1H271J	CHIP C	270PF	J	
C324			CK73GB1H103K	CHIP C	0.010UF	K	
C326			CK73GB1H103K	CHIP C	0.010UF	K	
C350			CK73GB1H471K	CHIP C	470PF	K	
C351			CC73GCH1H330J	CHIP C	33PF	J	
C353			CK73GB1H103K	CHIP C	0.010UF	K	
C355			CC73GCH1H150J	CHIP C	15PF	J	
C357			CK73GB1H103K	CHIP C	0.010UF	K	
C358			CK73GB1H102K	CHIP C	1000PF	K	
C359			CC73GCH1H080B	CHIP C	8.0PF	B	
C360-362			CK73GB1H102K	CHIP C	1000PF	K	
C363			CK73GB1H103K	CHIP C	0.010UF	K	
C364			CK73GB1H102K	CHIP C	1000PF	K	
C366			CK73GB1C104K	CHIP C	0.10UF	K	
C367			CC73GCH1H101J	CHIP C	100PF	J	M,K
C367			CC73GCH1H151J	CHIP C	150PF	J	M2
C368			CC73GCH1H220J	CHIP C	22PF	J	
C369			CC73GCH1H0R5B	CHIP C	0.5PF	B	M2
C369			CC73GCH1H040B	CHIP C	4.0PF	B	M,K
C370			CK73GB1H102K	CHIP C	1000PF	K	
C371			CC73GCH1H020B	CHIP C	2.0PF	B	
C372			CK73GB1H102K	CHIP C	1000PF	K	
C373			CC73GCH1H040B	CHIP C	4.0PF	B	M,K
C374			CC73GCH1H220J	CHIP C	22PF	J	

K : TK-7100 K   M : TK-7100 M   M2 : TK-7100 M2

PARTS LIST

TX-RX UNIT (X57-6910-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C375-380			CK73GB1H102K	CHIP C 1000PF K	
C382			CC73GCH1H220J	CHIP C 22PF J	
C383			CK73GB1H102K	CHIP C 1000PF K	
C384			CC73GCH1H010B	CHIP C 1.0PF B	
C386			CC73GCH1H240J	CHIP C 24PF J	M,K
C386			CC73GCH1H270J	CHIP C 27PF J	M2
C387			CK73GB1H102K	CHIP C 1000PF K	
C388			CC73GCH1H040B	CHIP C 4.0PF B	M,K
C388			CC73GCH1H060B	CHIP C 6.0PF B	M2
C389			CK73GB1H102K	CHIP C 1000PF K	
C401-403			CC73GCH1H101J	CHIP C 100PF J	
C404			C92-0662-05	CHIP-TAN 15UF 6.3WV	
C406			CK73GB1H102K	CHIP C 1000PF K	
C408			CC73GCH1H220J	CHIP C 22PF J	
C409			CK73GB1C104K	CHIP C 0.10UF K	
C410			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C411			CK73GB1C104K	CHIP C 0.10UF K	
C412			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C413			CK73GB1H103K	CHIP C 0.010UF K	
C414			CK73GB1C104K	CHIP C 0.10UF K	
C416-418			CK73GB1H102K	CHIP C 1000PF K	
C421,422			CK73GB1H471K	CHIP C 470PF K	
C423			C92-0555-05	CHIP-TAN 0.047UF 35WV	
C424			C92-0004-05	CHIP-TAN 1.0UF 16WV	
C425			C92-0001-05	CHIP C 0.1UF 35WV	
C426			CC73GCH1H120J	CHIP C 12PF J	M2
C426			CC73GCH1H270J	CHIP C 27PF J	M,K
C427			CC73GCH1H040B	CHIP C 4.0PF B	M2
C427			CC73GCH1H080B	CHIP C 8.0PF B	M,K
C428			CK73GB1H471K	CHIP C 470PF K	
C429			CC73GCH1H010B	CHIP C 1.0PF B	M,K
C429			CC73GCH1H020B	CHIP C 2.0PF B	M2
C430,431			CC73GCH1H050B	CHIP C 5.0PF B	
C432			CC73GCH1H0R5B	CHIP C 0.5PF B	
C434			CC73GCH1H330J	CHIP C 33PF J	M2
C434			CK73GB1H471K	CHIP C 470PF K	M,K
C435			CC73GCH1H050B	CHIP C 5.0PF B	M2
C435			CC73GCH1H100C	CHIP C 10PF C	M,K
C436			CC73GCH1H0R5B	CHIP C 0.5PF B	
C437			CK73GB1H471K	CHIP C 470PF K	
C438			CC73GCH1H020B	CHIP C 2.0PF B	
C439			CC73GCH1H060B	CHIP C 6.0PF B	M,K
C439,440			CC73GCH1H060B	CHIP C 6.0PF B	M2
C440			CC73GCH1H070B	CHIP C 7.0PF B	M,K
C441			CC73GCH1H0R5B	CHIP C 0.5PF B	
C442			C92-0560-05	CHIP-TAN 10UF 6.3WV	
C444			CK73GB1H471K	CHIP C 470PF K	
C448,449			CK73GB1H471K	CHIP C 470PF K	
C450			C92-0568-05	CHIP-TAN 22UF 10WV	
C451,452			CK73GB1H471K	CHIP C 470PF K	
C453			CK73GB1H221K	CHIP C 220PF K	
C454			CC73GCH1H060B	CHIP C 6.0PF B	
C455			CC73GCH1H030B	CHIP C 3.0PF B	
C456			CC73GCH1H020B	CHIP C 2.0PF B	
C457			CK73GB1H102K	CHIP C 1000PF K	
C458			CK73GB1H221K	CHIP C 220PF K	
C459			CK73GB1H102K	CHIP C 1000PF K	
C460			CC73GCH1H180J	CHIP C 18PF J	
C461			CK73GB1H102K	CHIP C 1000PF K	
C462			CC73GCH1H100C	CHIP C 10PF C	

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
C463,464			CK73GB1H102K	CHIP C 1000PF K	
C465			CC73GCH1H220J	CHIP C 22PF J	
C466			CC73GCH1H101J	CHIP C 100PF J	
C467			CK73GB1H102K	CHIP C 1000PF K	
C468			CK73GB1H221K	CHIP C 220PF K	
C471			CC73GCH1H100C	CHIP C 10PF C	M,K
C471			CC73GCH1H120J	CHIP C 12PF J	M2
C501,502			CK73GB1H102K	CHIP C 1000PF K	
C503			CC73GCH1H101J	CHIP C 100PF J	
C504-507			CK73GB1H102K	CHIP C 1000PF K	
C509			CC73GCH1H150J	CHIP C 15PF J	
C510			CC73GCH1H080B	CHIP C 8.0PF B	
C511-514			CK73GB1H102K	CHIP C 1000PF K	
C515			CC73GCH1H270J	CHIP C 27PF J	
C516			C93-0557-05	CHIP C 7.0PF D	M,K
C517			C93-0559-05	CHIP C 9.0PF D	M,K
C517			C93-0563-05	CHIP C 18PF J	M2
C518			C93-0558-05	CHIP C 8.0PF D	M,K
C518			C93-0560-05	CHIP C 10PF D	M2
C522			CK73FB1H102K	CHIP C 1000PF K	
C524			C92-0004-05	CHIP-TAN 1.0UF 16WV	
C525			CK73GB1H102K	CHIP C 1000PF K	
C545			CK73GB1H102K	CHIP C 1000PF K	
C546			CK73GB1H221K	CHIP C 220PF K	
C556			CK73GB1H102K	CHIP C 1000PF K	
C557,558			CK73GB1H103K	CHIP C 0.010UF K	
C559			CK73GB1C104K	CHIP C 0.10UF K	
C560			CK73GB1H102K	CHIP C 1000PF K	
C574			CK73GB1C104K	CHIP C 0.10UF K	
C576			C92-0719-05	ELECTRO 47UF 25WV	
C601			CC73GCH1H120J	CHIP C 12PF J	M,K
C601			CC73GCH1H180J	CHIP C 18PF J	M2
C603			C93-0603-05	CHIP C 1000PF K	
C604			C93-0554-05	CHIP C 4.0PF C	
C605			C93-0564-05	CHIP C 22PF J	M,K
C605			C93-0565-05	CHIP C 27PF J	M2
C606			CC73GCH1H0R5B	CHIP C 0.5PF B	
C607			CC73GCH1H010B	CHIP C 1.0PF B	M2
C607			CC73GCH1H020B	CHIP C 2.0PF B	M,K
C608			C93-0565-05	CHIP C 27PF J	
C610			CC73GCH1H0R5B	CHIP C 0.5PF B	
C611			CC73GCH1H020B	CHIP C 2.0PF B	
C612			C93-0557-05	CHIP C 7.0PF D	
C615			C93-0562-05	CHIP C 15PF J	
C616,617			CK73GB1H102K	CHIP C 1000PF K	
TC351			C05-0399-05	CERAMIC TRIMMER CAP (6PF)	
TC352			C05-0245-05	CERAMIC TRIMMER CAP (10PF)	
TC401,402			C05-0245-05	CERAMIC TRIMMER CAP (10PF)	
J1			E11-0425-05	3.5D PHONE JACK (3P)	
CN1			E40-6268-05	FLAT CABLE CONNECTOR	
CN2			E40-5702-05	PIN ASSY	
CN3			E40-6292-05	PIN ASSY	
CN5			E40-3246-05	PIN ASSY	
CN301-304			E23-1081-05	TERMINAL	
CN501-503			E23-1081-05	TERMINAL	
CF301			L72-0993-05	CERAMIC FILTER	
CF302			L72-0999-05	CERAMIC FILTER	
L101			L92-0443-05	FERRITE CHIP	
L201			L92-0443-05	FERRITE CHIP	

K : TK-7100 K   M : TK-7100 M   M2 : TK-7100 M2

PARTS LIST

TX-RX UNIT (X57-6910-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti- nation
L301			L34-4554-05	COIL	
L302			L41-3385-08	SMALL FIXED INDUCTOR	
L303,304			L40-3381-86	SMALL FIXED INDUCTOR (0.33UH)	
L351			L41-8285-08	SMALL FIXED INDUCTOR	
L352			L41-5685-08	SMALL FIXED INDUCTOR	
L354-356			L34-4612-05	AIR-CORE COIL	M,K
L354-356			L34-4613-05	AIR-CORE COIL	M2
L357			L34-4611-05	AIR-CORE COIL	
L401			L92-0443-05	FERRITE CHIP	
L403			L41-1005-08	SMALL FIXED INDUCTOR	
L404			L92-0442-05	FERRITE CHIP	
L405			L92-0443-05	FERRITE CHIP	
L406,407			L40-2702-86	SMALL FIXED INDUCTOR (27UH)	M,K
L406,407			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	M2
L408			L40-2778-67	SMALL FIXED INDUCTOR (27NH)	M,K
L408			L40-3978-67	SMALL FIXED INDUCTOR (39NH)	M2
L409-412			L40-2702-86	SMALL FIXED INDUCTOR (27UH)	M,K
L409-412			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	M2
L413			L40-3978-67	SMALL FIXED INDUCTOR (39NH)	M,K
L413			L40-6878-67	SMALL FIXED INDUCTOR (68NH)	M2
L414			L40-2785-92	SMALL FIXED INDUCTOR (270NH)	M2
L414,415			L40-4791-86	SMALL FIXED INDUCTOR (4.7UH)	M,K
L415			L40-1085-92	SMALL FIXED INDUCTOR (100NH)	M2
L416,417			L92-0443-05	FERRITE CHIP	
L418			L40-6875-92	SMALL FIXED INDUCTOR (68NH)	M2
L418			L41-3375-06	SMALL FIXED INDUCTOR	M,K
L419			L41-1085-06	SMALL FIXED INDUCTOR	
L420			L41-1585-06	SMALL FIXED INDUCTOR	
L421			L41-1085-06	SMALL FIXED INDUCTOR	
L422			L41-5675-06	SMALL FIXED INDUCTOR	
L501,502			L41-6875-08	SMALL FIXED INDUCTOR	
L503			L34-4669-05	AIR-CORE COIL	
L509			L34-4667-05	AIR-CORE COIL	
L601			L34-4668-05	AIR-CORE COIL	
L603,604			L34-4670-05	AIR-CORE COIL	
L605			L34-4667-05	AIR-CORE COIL	
X86			L77-1934-05	CRYSTAL RESONATOR (14.31818MHZ)	
X401			L77-1868-15	TCXO (16.8MHZ)	
XF351			L71-0591-05	MCF (49.95MHZ/UM-4)	
R1			RK73GB1J101J	CHIP R 100 J 1/16W	
R2			R92-1252-05	CHIP R 0 OHM J 1/16W	
R3			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R4			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R5			RK73GB1J223J	CHIP R 22K J 1/16W	
R31			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R32			R92-1201-05	CHIP R 220 J 1/2W	
R33			RK73GB1J473J	CHIP R 47K J 1/16W	
R34			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R35			RK73GB1J473J	CHIP R 47K J 1/16W	
R36			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R37			R92-1252-05	CHIP R 0 OHM J 1/16W	
R38			RK73GB1J334J	CHIP R 330K J 1/16W	
R39			RK73GB1J474J	CHIP R 470K J 1/16W	
R40			RK73GB1J394J	CHIP R 390K J 1/16W	
R41			RK73GB1J334J	CHIP R 330K J 1/16W	
R61			RK73GB1J471J	CHIP R 470 J 1/16W	
R62			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R66,67			RK73GB1J473J	CHIP R 47K J 1/16W	
R68,69			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R70			RK73GB1J473J	CHIP R 47K J 1/16W	
R71			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R72			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R73			RK73GB1J104J	CHIP R 100K J 1/16W	
R74			RK73GB1J473J	CHIP R 47K J 1/16W	
R75			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R76			RK73GH1J183D	CHIP R 18K D 1/16W	
R77		*	RK73GH1J134D	CHIP R 130K D 1/16W	
R78			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R81			RK73GB1J473J	CHIP R 47K J 1/16W	
R82			R92-1252-05	CHIP R 0 OHM J 1/16W	
R86			R92-1252-05	CHIP R 0 OHM J 1/16W	
R87			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R91,92			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R93			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R94			RK73GB1J123J	CHIP R 12K J 1/16W	
R101,102			RK73GB1J473J	CHIP R 47K J 1/16W	
R103-106			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R107,108			RK73GB1J473J	CHIP R 47K J 1/16W	
R109			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R110			RK73GB1J473J	CHIP R 47K J 1/16W	
R111			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R112,113			RK73GB1J473J	CHIP R 47K J 1/16W	
R114-119			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R120			R92-1252-05	CHIP R 0 OHM J 1/16W	
R122,123			R92-1252-05	CHIP R 0 OHM J 1/16W	
R124			RK73GB1J473J	CHIP R 47K J 1/16W	
R125-128			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R129			R92-1252-05	CHIP R 0 OHM J 1/16W	
R130,131			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R151			RK73GB1J103J	CHIP R 10K J 1/16W	
R152			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R161			RK73GB1J122J	CHIP R 1.2K J 1/16W	
R162			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R163			RK73GB1J473J	CHIP R 47K J 1/16W	
R164-166			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R201			RK73GB1J681J	CHIP R 680 J 1/16W	
R202			R92-0670-05	CHIP R 0 OHM	
R203			RK73GB1J104J	CHIP R 100K J 1/16W	
R204			RK73GB1J183J	CHIP R 18K J 1/16W	
R205			RK73GB1J821J	CHIP R 820 J 1/16W	
R206			RK73GB1J101J	CHIP R 100 J 1/16W	
R207			RK73GB1J754J	CHIP R 750K J 1/16W	
R208			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R209			RK73GB1J244J	CHIP R 240K J 1/16W	
R210			RK73GB1J183J	CHIP R 18K J 1/16W	
R211,212			RK73GB1J823J	CHIP R 82K J 1/16W	
R213			RK73GB1J334J	CHIP R 330K J 1/16W	
R214,215			RK73GB1J683J	CHIP R 68K J 1/16W	
R216			RK73GB1J274J	CHIP R 270K J 1/16W	
R217			RK73GB1J224J	CHIP R 220K J 1/16W	
R218			RK73GB1J823J	CHIP R 82K J 1/16W	
R219			RK73GB1J184J	CHIP R 180K J 1/16W	
R220,221			RK73GH1J153D	CHIP R 15K D 1/16W	
R222			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R223			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R224			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R225			RK73GB1J154J	CHIP R 150K J 1/16W	
R226			RK73GB1J104J	CHIP R 100K J 1/16W	
R227			RK73GB1J223J	CHIP R 22K J 1/16W	

K : TK-7100 K   M : TK-7100 M   M2 : TK-7100 M2

PARTS LIST

TX-RX UNIT (X57-6910-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R228			RK73GB1J103J	CHIP R 10K J 1/16W	
R229			RK73GB1J684J	CHIP R 680K J 1/16W	
R230			RK73GB1J124J	CHIP R 120K J 1/16W	
R231			RK73GB1J683J	CHIP R 68K J 1/16W	
R232			RK73GB1J912J	CHIP R 9.1K J 1/16W	
R233			RK73GB1J682J	CHIP R 6.8K J 1/16W	
R249-251			RK73GB1J473J	CHIP R 47K J 1/16W	
R252			RK73GB1J474J	CHIP R 470K J 1/16W	
R253			R92-1252-05	CHIP R 0 OHM J 1/16W	
R254			RK73GB1J681J	CHIP R 680 J 1/16W	
R255,256			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R257			RK73GB1J105J	CHIP R 1.0M J 1/16W	
R258			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R259			RK73GB1J123J	CHIP R 12K J 1/16W	
R260			RK73GB1J224J	CHIP R 220K J 1/16W	
R261			RK73GB1J124J	CHIP R 120K J 1/16W	
R262			RK73GB1J183J	CHIP R 18K J 1/16W	
R263			RK73GH1J913D	CHIP R 91K D 1/16W	
R264			RK73GH1J124D	CHIP R 120K D 1/16W	
R265			RK73GH1J562D	CHIP R 5.6K D 1/16W	
R266			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R267			R92-0670-05	CHIP R 0 OHM	
R268			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R269			RK73GB1J823J	CHIP R 82K J 1/16W	
R270			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R271			RK73GB1J561J	CHIP R 560 J 1/16W	
R272			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R273			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R274,275			RK73GB1J153J	CHIP R 15K J 1/16W	
R276			RK73GB1J473J	CHIP R 47K J 1/16W	
R277			RK73GB1J683J	CHIP R 68K J 1/16W	
R278			RK73GB1J123J	CHIP R 12K J 1/16W	
R279			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R280			RK73GB1J391J	CHIP R 390 J 1/16W	
R281			R92-0670-05	CHIP R 0 OHM	
R301,302			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R303			RK73GB1J223J	CHIP R 22K J 1/16W	
R304			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R305			RK73GB1J182J	CHIP R 1.8K J 1/16W	
R306			RK73GB1J274J	CHIP R 270K J 1/16W	
R308			RK73GB1J334J	CHIP R 330K J 1/16W	
R309			RK73GB1J332J	CHIP R 3.3K J 1/16W	
R310			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R311			RK73GB1J333J	CHIP R 33K J 1/16W	
R312			RK73GB1J473J	CHIP R 47K J 1/16W	
R313			RK73GB1J104J	CHIP R 100K J 1/16W	
R314			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R315			RK73GB1J183J	CHIP R 18K J 1/16W	
R316			RK73GB1J223J	CHIP R 22K J 1/16W	
R317-320			RK73GB1J103J	CHIP R 10K J 1/16W	
R321			RK73GB1J223J	CHIP R 22K J 1/16W	
R322			RK73GB1J101J	CHIP R 100 J 1/16W	
R323			RK73GB1J224J	CHIP R 220K J 1/16W	
R324			R92-1252-05	CHIP R 0 OHM J 1/16W	
R325			RK73GB1J333J	CHIP R 33K J 1/16W	
R349			RK73GB1J473J	CHIP R 47K J 1/16W	
R350			RK73GB1J273J	CHIP R 27K J 1/16W	
R351			RK73GB1J471J	CHIP R 470 J 1/16W	
R352			RK73GB1J101J	CHIP R 100 J 1/16W	
R353			RK73GB1J104J	CHIP R 100K J 1/16W	
R354			RK73GB1J331J	CHIP R 330 J 1/16W	
R355			RK73GB1J471J	CHIP R 470 J 1/16W	M,K
R355,356			RK73GB1J102J	CHIP R 1.0K J 1/16W	M2
R356			RK73GB1J102J	CHIP R 1.0K J 1/16W	M,K
R358			RK73GB1J470J	CHIP R 47 J 1/16W	
R359			RK73GB1J224J	CHIP R 220K J 1/16W	
R360			RK73GB1J474J	CHIP R 470K J 1/16W	
R361			RK73GB1J470J	CHIP R 47 J 1/16W	M,K
R361			RK73GB1J560J	CHIP R 56 J 1/16W	M2
R362			RK73GB1J474J	CHIP R 470K J 1/16W	
R363			RK73GB1J154J	CHIP R 150K J 1/16W	
R364			R92-1252-05	CHIP R 0 OHM J 1/16W	
R365			RK73GB1J104J	CHIP R 100K J 1/16W	
R366			RK73GB1J471J	CHIP R 470 J 1/16W	
R367			RK73GB1J470J	CHIP R 47 J 1/16W	
R368			RK73GB1J104J	CHIP R 100K J 1/16W	
R369			R92-1252-05	CHIP R 0 OHM J 1/16W	
R370			RK73GB1J151J	CHIP R 150 J 1/16W	
R371			RK73GB1J474J	CHIP R 470K J 1/16W	
R372			RK73GB1J124J	CHIP R 120K J 1/16W	M2
R372			RK73GB1J224J	CHIP R 220K J 1/16W	M,K
R373			RK73GB1J684J	CHIP R 680K J 1/16W	
R374			RK73GB1J124J	CHIP R 120K J 1/16W	M2
R374			RK73GB1J184J	CHIP R 180K J 1/16W	M,K
R375,376			RK73GB1J104J	CHIP R 100K J 1/16W	
R378			RK73GB1J100J	CHIP R 10 J 1/16W	M2
R378			R92-1252-05	CHIP R 0 OHM J 1/16W	M,K
R379			RK73GB1J104J	CHIP R 100K J 1/16W	
R401-403			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R404			RK73GB1J103J	CHIP R 10K J 1/16W	
R405			R92-1252-05	CHIP R 0 OHM J 1/16W	
R407			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R408			RK73GB1J100J	CHIP R 10 J 1/16W	
R409			RK73GB1J104J	CHIP R 100K J 1/16W	
R410			RK73GB1J103J	CHIP R 10K J 1/16W	M2
R410			RK73GB1J822J	CHIP R 8.2K J 1/16W	M,K
R411			RK73GB1J562J	CHIP R 5.6K J 1/16W	
R412,413			RK73GB1J103J	CHIP R 10K J 1/16W	
R414			RK73GB1J471J	CHIP R 470 J 1/16W	
R415			R92-1252-05	CHIP R 0 OHM J 1/16W	
R416			RK73GB1J471J	CHIP R 470 J 1/16W	
R417			RK73GB1J224J	CHIP R 220K J 1/16W	
R418,419			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R420			RK73GB1J272J	CHIP R 2.7K J 1/16W	
R421			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R422			RK73GB1J103J	CHIP R 10K J 1/16W	
R423			RK73GB1J331J	CHIP R 330 J 1/16W	M2
R423,424			RK73GB1J221J	CHIP R 220 J 1/16W	M,K
R424			RK73GB1J221J	CHIP R 220 J 1/16W	M2
R425,426			RK73GB1J473J	CHIP R 47K J 1/16W	
R427			RK73GB1J104J	CHIP R 100K J 1/16W	
R428			RK73GB1J473J	CHIP R 47K J 1/16W	
R429,430			RK73GB1J101J	CHIP R 100 J 1/16W	
R431			RK73GB1J104J	CHIP R 100K J 1/16W	
R432			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R433			RK73GB1J472J	CHIP R 4.7K J 1/16W	
R434			R92-1252-05	CHIP R 0 OHM J 1/16W	
R435			RK73GB1J101J	CHIP R 100 J 1/16W	
R436			RK73GB1J124J	CHIP R 120K J 1/16W	
R437			RK73GB1J102J	CHIP R 1.0K J 1/16W	

K : TK-7100 K M : TK-7100 M M2 : TK-7100 M2

PARTS LIST

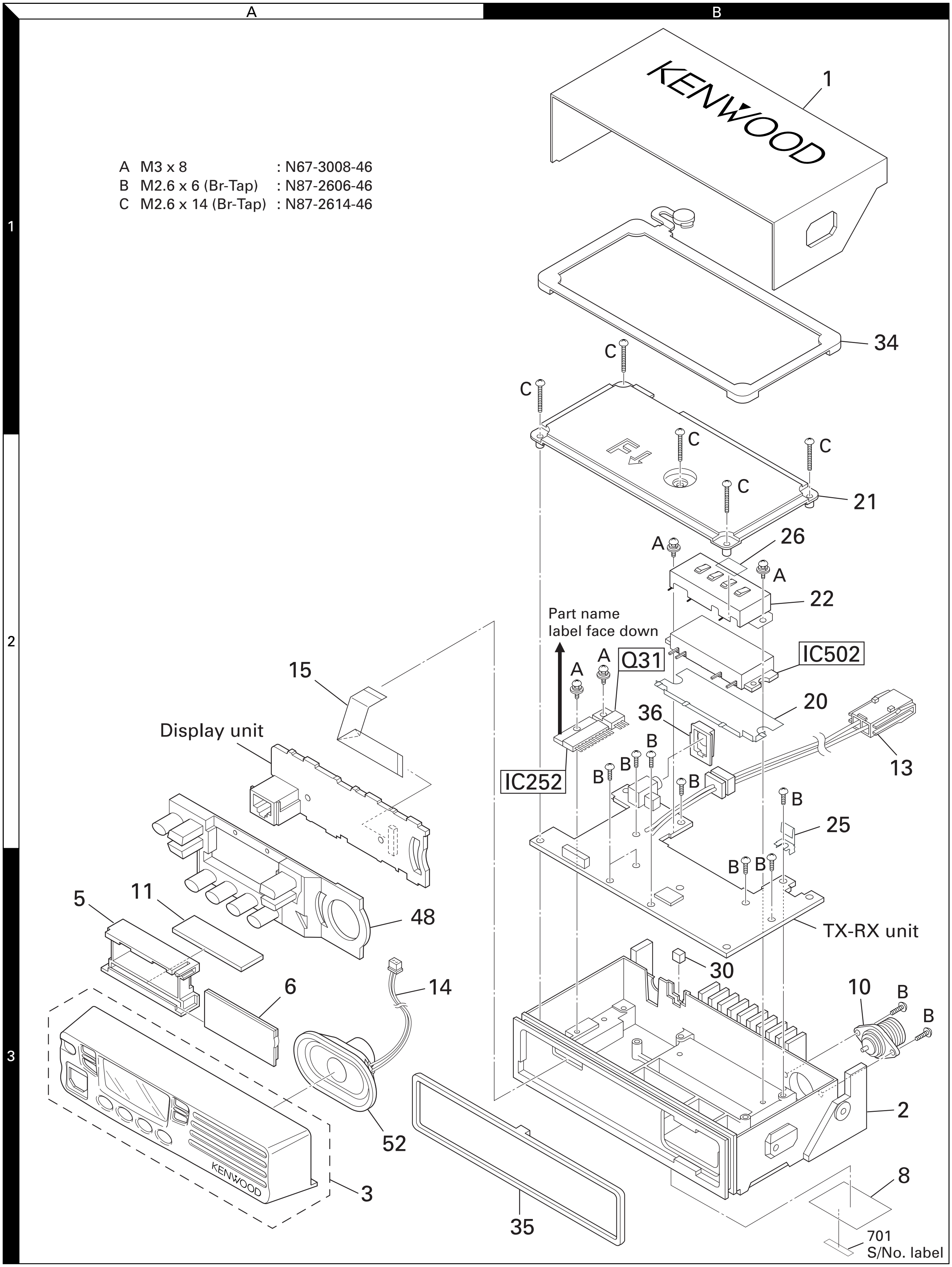
TX-RX UNIT (X57-6910-XX)

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
R438			RK73GB1J223J	CHIP R 22K J 1/16W	
R439			RK73GB1J473J	CHIP R 47K J 1/16W	
R440-442			RK73GB1J101J	CHIP R 100 J 1/16W	
R443			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R444			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R501			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R502			RK73GB1J271J	CHIP R 270 J 1/16W	
R503			RK73GB1J180J	CHIP R 18 J 1/16W	
R504			RK73GB1J271J	CHIP R 270 J 1/16W	
R505			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R506			RK73GB1J103J	CHIP R 10K J 1/16W	
R507			RK73GB1J100J	CHIP R 10 J 1/16W	
R508			RK73GB1J222J	CHIP R 2.2K J 1/16W	
R509			RK73GB1J330J	CHIP R 33 J 1/16W	
R510			RK73GB1J152J	CHIP R 1.5K J 1/16W	
R511			RK73FB2A470J	CHIP R 47 J 1/10W	
R512			RK73FB2A100J	CHIP R 10 J 1/10W	
R513			RK73FB2A222J	CHIP R 2.2K J 1/10W	
R514			R92-0686-05	CHIP R 33 J 1/2W	
R515			RK73FB2A221J	CHIP R 220 J 1/10W	
R516			RK73FB2A220J	CHIP R 22 J 1/10W	
R517			RK73FB2A221J	CHIP R 220 J 1/10W	
R518			RK73EB2B470J	CHIP R 47 J 1/8W	
R519			RK73GB1J822J	CHIP R 8.2K J 1/16W	
R520			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R521			RK73GB1J101J	CHIP R 100 J 1/16W	
R522			R92-1252-05	CHIP R 0 OHM J 1/16W	
R526			R92-1261-05	CHIP R 150 J 1/2W	
R527			RK73GB1J334J	CHIP R 330K J 1/16W	
R528,529			RK73GB1J103J	CHIP R 10K J 1/16W	
R530			RK73GB1J392J	CHIP R 3.9K J 1/16W	
R531			RK73GB1J473J	CHIP R 47K J 1/16W	
R532,533			R92-1252-05	CHIP R 0 OHM J 1/16W	
R601,602			RK73GB1J223J	CHIP R 22K J 1/16W	
R603			RK73GB1J473J	CHIP R 47K J 1/16W	
R605			RK73GB1J473J	CHIP R 47K J 1/16W	
R606			RK73GB1J102J	CHIP R 1.0K J 1/16W	
R800			R92-1061-05	JUMPER REST 0 OHM	
D1-11			DA221	DIODE	
D31			ZSH5MA27	SURGE ABSORBER	
D32			1812L110PR	VARISTOR	
D61			02DZ18(X,Y)	ZENER DIODE	
D201			DAN222	DIODE	
D202			1SS372	DIODE	
D251			MA742	DIODE	
D301			MA742	DIODE	
D302,303			DAN222	DIODE	
D351-354			HVC350B	VARIABLE CAPACITANCE DIODE	
D401			MA2S111	DIODE	
D402			HZU5ALL	DIODE	
D403-406			MA2S304	VARIABLE CAPACITANCE DIODE	
D407			MA360	VARIABLE CAPACITANCE DIODE	
D408			MA2S111	DIODE	
D409			DAN235E	DIODE	
D501			1SS355	DIODE	
D502			DA221	DIODE	
D503			02DZ5.1(Y)	ZENER DIODE	
D602			MA4PH633	DIODE	
D603			XB15A709	DIODE	M,K

Ref. No.	Address	New parts	Parts No.	Description	Desti-nation
D604			XB15A709	DIODE	M2
D606,607			MA742	DIODE	
D608,609			1SS355	DIODE	
IC31			KIA7808AF	ANALOG IC	
IC32,33			NJM78L05UA	BI-POLAR IC	
IC34,35			PST9140NR	MOS IC	
IC66			AT24C64A10SI18	ROM IC	
IC101		*	30622MAA-B86GP	MPU	
IC161			M62363FP	MOS IC	
IC201			NJM2100V	MOS IC	
IC202			NJM2904V	MOS IC	
IC203			NJM2902V	MOS IC	
IC251			NJM2902V	MOS IC	
IC252	2B		LA4600	BI-POLAR IC	
IC301			TK14489V	BI-POLAR IC	
IC401			MB15A02	MOS IC	
IC402			UPB1509GV	BI-POLAR IC	
IC501			TA75W01FU	MOS IC	
IC502	2B		RA30H1317M-31	MOS IC	
Q1			2SK1824	FET	
Q31	2B		KTA1046(Y)	TRANSISTOR	
Q32			2SK1824	FET	
Q33			2SA1745(6,7)	TRANSISTOR	
Q34			KRC102S	DIGITAL TRANSISTOR	
Q35			KTA1664(Y)	TRANSISTOR	
Q36			KRC102S	DIGITAL TRANSISTOR	
Q61			KRC404RTK	DIGITAL TRANSISTOR	
Q71			KRC414RTK	DIGITAL TRANSISTOR	
Q86,87			2SK1824	FET	
Q201			2SC4919	TRANSISTOR	
Q202			2SJ243	FET	
Q251			2SC4617(S)	TRANSISTOR	
Q252,253			2SK1824	FET	
Q254			DTC363EU	DIGITAL TRANSISTOR	
Q255			KRC102S	DIGITAL TRANSISTOR	
Q301			2SC2412K	TRANSISTOR	
Q302			2SC4617(S)	TRANSISTOR	
Q351			2SC5108(Y)	TRANSISTOR	
Q352,353			3SK255	FET	
Q354			2SK1824	FET	
Q402			2SA1832(GR)	TRANSISTOR	
Q403			2SC4738(GR)	TRANSISTOR	
Q404			2SC4649(N,P)	TRANSISTOR	
Q405,406			2SK508NV(K52)	FET	
Q407			2SJ243	FET	
Q408			KRX102U	TRANSISTOR	
Q410			2SC5108(Y)	TRANSISTOR	
Q411			2SC4649(N,P)	TRANSISTOR	
Q440			2SC4617(S)	TRANSISTOR	
Q501,502			2SC3357	TRANSISTOR	
TH97,98			B57331V2104J	THERMISTOR	
TH301			B57331V2104J	THERMISTOR	
TH351			B57331V2104J	THERMISTOR	M2

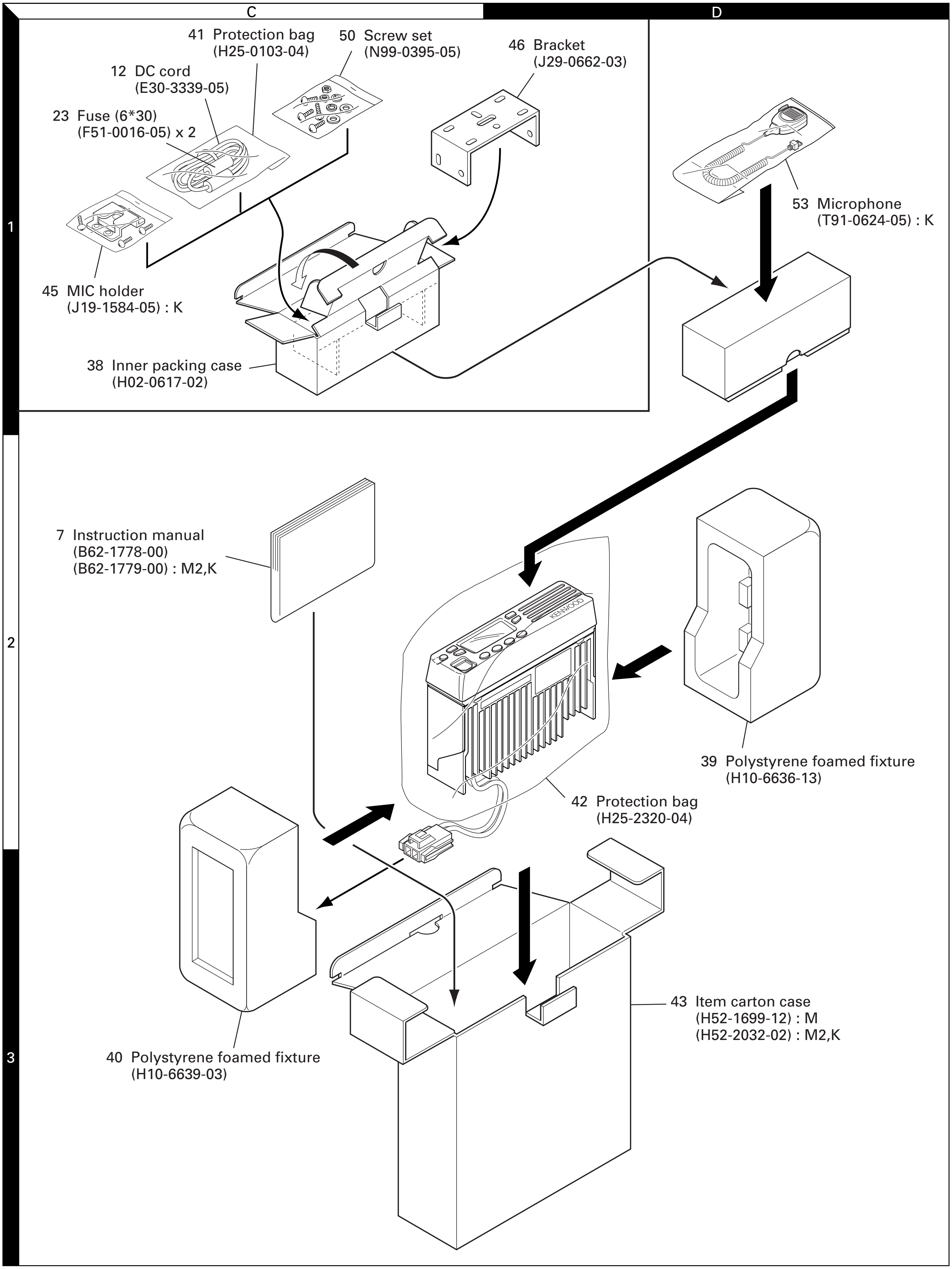
K : TK-7100 K M : TK-7100 M M2 : TK-7100 M2

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PACKING

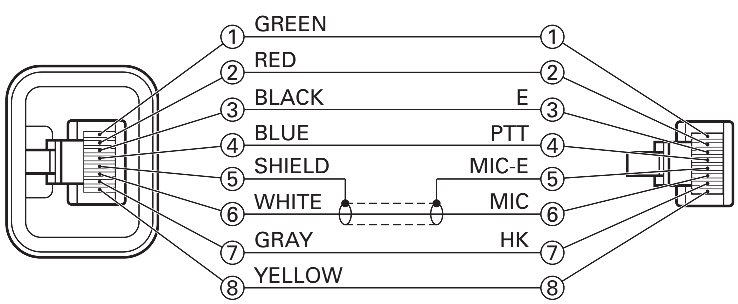

C
D
1
2
3
41 Protection bag
(H25-0103-04)
50 Screw set
(N99-0395-05)
46 Bracket
(J29-0662-03)
12 DC cord
(E30-3339-05)
23 Fuse (6*30)
(F51-0016-05) x 2
53 Microphone
(T91-0624-05) : K
45 MIC holder
(J19-1584-05) : K
38 Inner packing case
(H02-0617-02)
7 Instruction manual
(B62-1778-00)
(B62-1779-00) : M2,K
39 Polystyrene foamed fixture
(H10-6636-13)
42 Protection bag
(H25-2320-04)
43 Item carton case
(H52-1699-12) : M
(H52-2032-02) : M2,K
40 Polystyrene foamed fixture
(H10-6639-03)

ADJUSTMENT

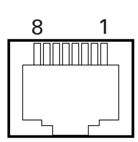
Test Equipment Required for Alignment

Test Equipment	Major Specifications	
1. Standard Signal Generator (SSG)	Frequency Range Modulation Output	136 to 175MHz Frequency modulation and external modulation –127dBm/0.1µV to greater than –7dBm/100mV
2. Power Meter	Input Impedance Operation Frequency Measurement Capability	50Ω 136 to 175MHz or more Vicinity of 100W
3. Deviation Meter	Frequency Range	136 to 175MHz
4. Digital Volt Meter (DVM)	Measuring Range Accuracy	1 to 20V DC High input impedance for minimum circuit loading
5. Oscilloscope		DC through 30MHz
6. High Sensitivity Frequency Counter	Frequency Range Frequency Stability	10Hz to 1000MHz 0.2ppm or less
7. Ammeter		20A
8. AF Volt Meter (AF VTVM)	Frequency Range Voltage Range	50Hz to 10kHz 1mV to 3V
9. Audio Generator (AG)	Frequency Range Output	20Hz to 20kHz or more 0 to 1V
10. Distortion Meter	Capability Input Level	3% or less at 1kHz 50mV to 10Vrms
11. 4Ω Dummy Load		Approx. 4Ω, 10W or more
12. Regulated Power Supply		13.6V, approx. 20A (adjustable from 9 to 17V) Useful if ammeter requipped
13. Spectrum Analyzer	Center frequency	50KHz to 600MHz
14. Tracking Generator	Output Voltage	100mV or more

Test cable for microphone input (E30-3360-08)



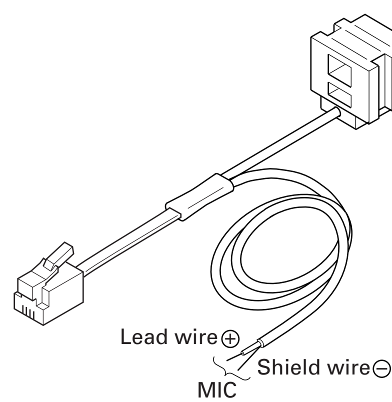
MIC connector (Front view)



1 : BLC
2 : PSB
3 : E
4 : PTT
5 : ME
6 : MIC
7 : HOOK
8 : CM

Tuning cable (E30-3383-05)

Adapter cable (E30-3383-05) is required for injecting an audio if PC tuning is used.
See "PC Mode" section for the connection.



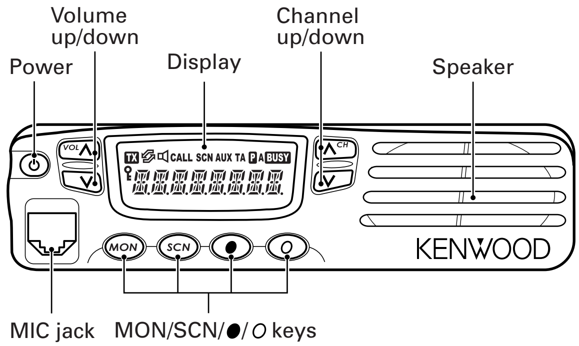
Test Frequency (MHz)

Channel	K,M		M2	
	TX	RX	TX	RX
1 : Center	160.100	160.050	149.100	149.050
2 : Low	146.100	146.050	136.100	136.050
3 : High	173.900	173.950	161.900	161.950
4	160.000	160.000	149.000	149.000
5	160.200	160.200	149.200	149.200
6	160.400	160.400	149.400	149.400

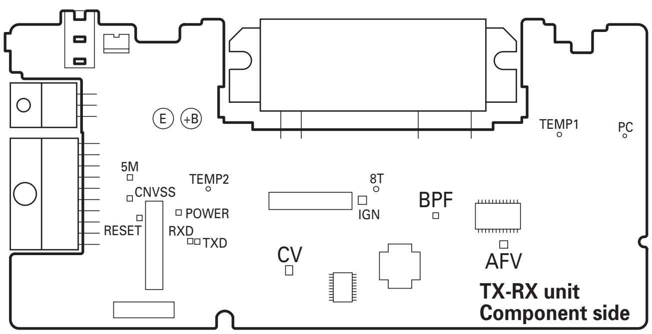
ADJUSTMENT

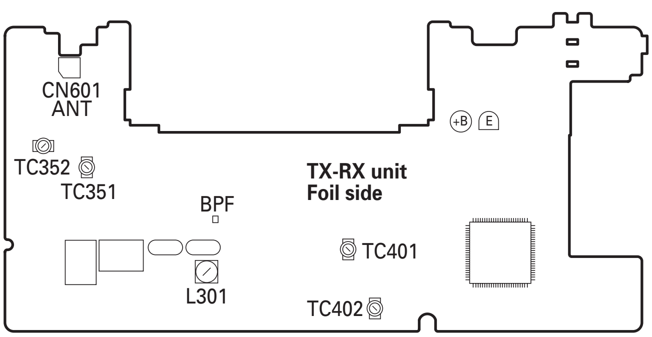
Adjustment Location

■ Switch



■ Adjustment Points





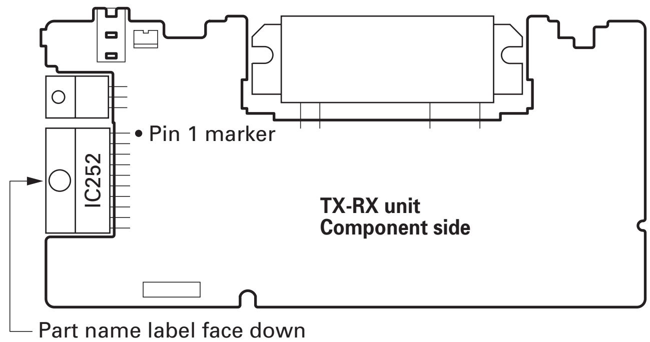
■ Notes

• EEPROM

The tuning data (Deviation, Squelch, etc.) for the EEPROM, is stored in memory. When parts are changed, re-adjust the transceiver.

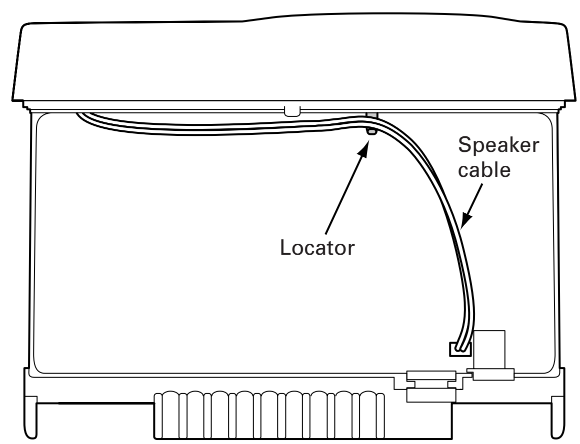
• AF PA IC (IC252)

How to mounting the IC252.



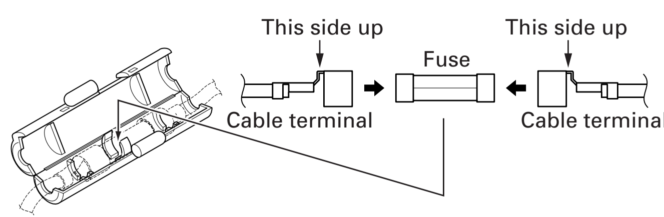
• Speaker Cable

The speaker cable should be formed before mounting the shield cover as below.



• Fuse

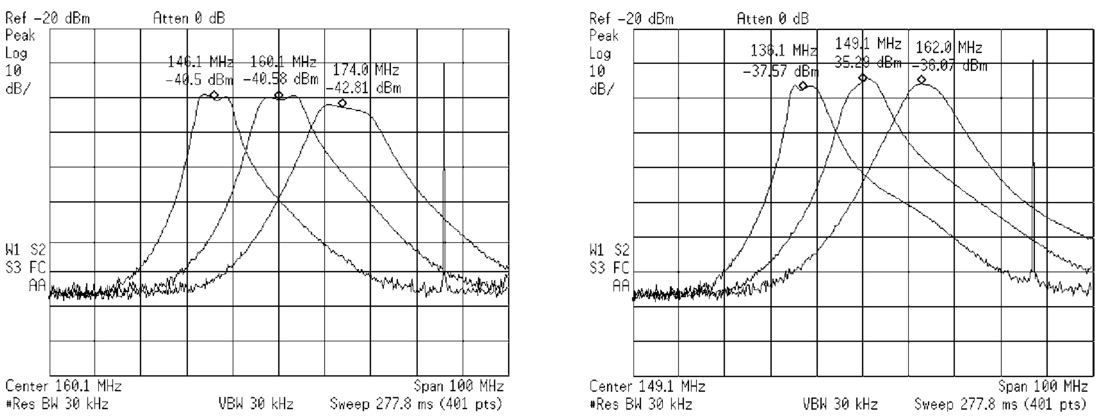
To mount the fuse, the cable terminal direction must be as follow.



ADJUSTMENT

PCB Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Setting	1) Power supply voltage DC Power supply terminal : 13.6V					
2. VCO lock voltage	1) CH : TX high	Digital voltmeter	CV	TC402	5.5V	±0.1V
	2) CH : RX high			TC401	5.5V	±0.1V
	3) CH : TX low				Check	0.7V or more
	4) CH : RX low					
3. IF coil	1) CH : RX center (Wide) 2) SSG output : –53dBm (501µV) Mod : 1kHz, Dev : 3kHz	SSG Digital voltmeter	AFV	L301	3.25~3.35V (DC)	
4. RF bandpass filter	1) CH : RX center (Wide) CH : RX low (Wide) CH : RX high (Wide) 2) Track generator output : –30dBm Connect the spectrum analyzer to BPF terminal	Track generator Spectrum analyzer	ANT BPF	TC351 TC352	Adjust the BPF waveform to Fig. 1	



K,M **Fig. 1** M2

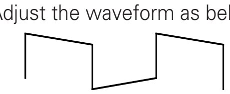
Receiver Section

Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Sensitivity	1) CH : RX low (Wide/Narrow) CH : RX center (Wide/Narrow) CH : RX high (Wide/Narrow) 2) SSG output : –118dBm (0.28µV) (Wide) : –116dBm (0.35µV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)	SSG Oscilloscope AF V.M Distortion meter	ANT EXT. SP		Check	SINAD : 12dB or higher
2. Squelch 9	1) CH : RX low (Wide) CH : RX center (Wide/Narrow) CH : RX high (Wide) 2) SSG output : –115dBm (0.4µV) (Wide) : –114dBm (0.45µV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)			PC key	Adjust to open the squelch	

ADJUSTMENT

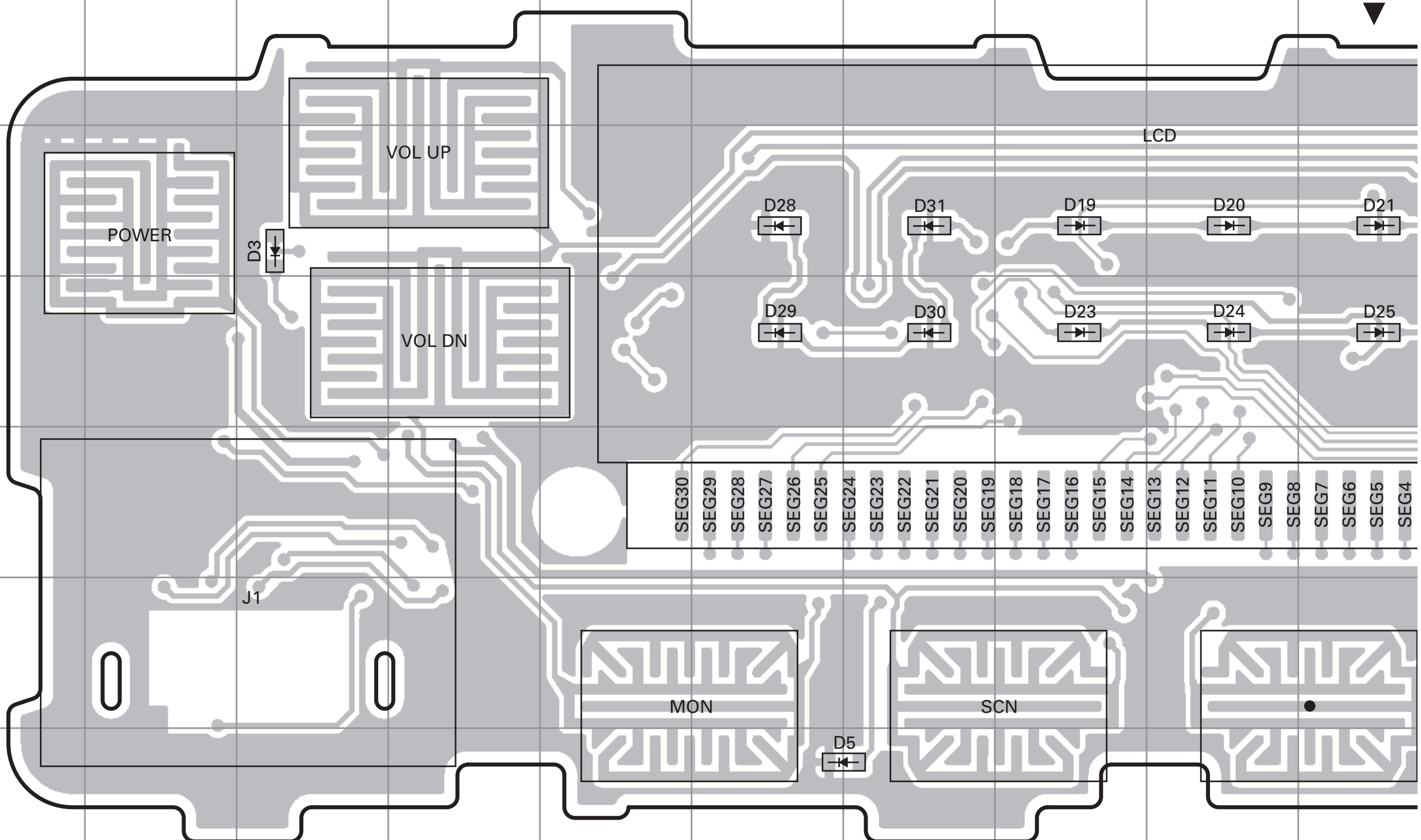
Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
3. Squelch 1	1) CH : RX low (Wide) CH : RX center (Wide/Narrow) CH : RX high (Wide) 2) SSG output : –120dBm (0.22µV) (Wide) : –119dBm (0.25µV) (Narrow) Mod : 1kHz Dev : ±3.0kHz (Wide) Dev : ±1.5kHz (Narrow)			PC key	Adjust to open the squelch	

Transmitter Section

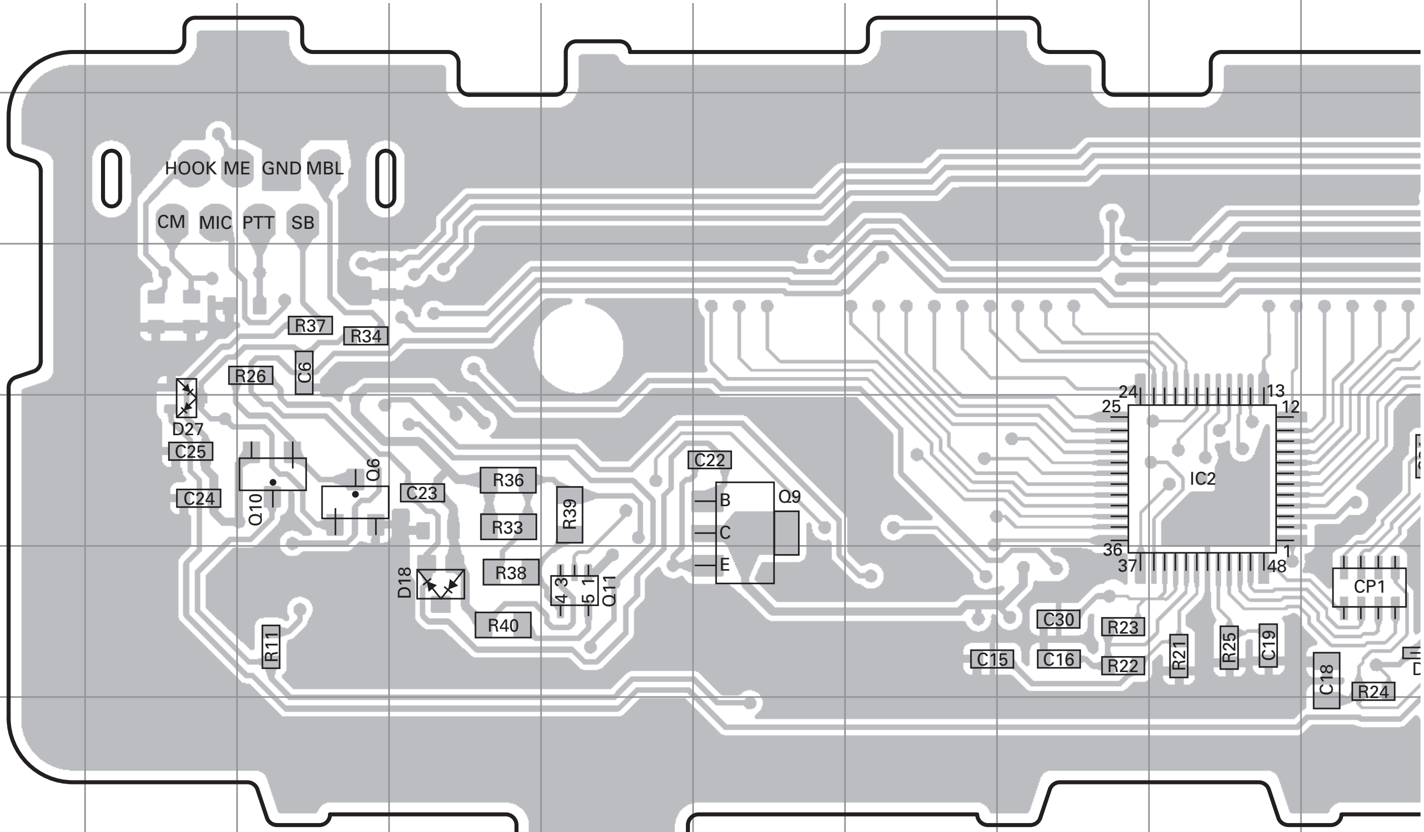
Item	Condition	Measurement		Adjustment		Specifications/ Remarks
		Test equipment	Terminal	Parts	Method	
1. Frequency	1) CH : TX center 2) Transmit	Frequency counter	ANT	PC key	Adjust to center frequency	Within ±100Hz
2. Maximum power check	1) CH : TX high 2) Transmit	Power meter			28W	±1W
3. High power	1) CH : TX low CH : TX low' CH : TX center CH : TX high' CH : TX high 2) Transmit				25W	±1.0W
4. Low power	1) CH : TX low CH : TX low' CH : TX center CH : TX high' CH : TX high 2) Transmit				5W	±1.0W
5. DQT balance	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit	Modulation analyzer or Linear detector (LPF : 3kHz) Oscilloscope			Adjust the waveform as below 	
6. MAX balance	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) AG : 1kHz/50mV 3) Transmit	Modulation analyzer or Linear detector (LPF : 15kHz) Oscilloscope AG	ANT MIC		±4.0kHz (Wide) ±2.0kHz (Narrow) According to the large +, –	±50Hz
7. MIC sensitivity	1) CH : TX center (Wide/Narrow) 2) AG : 1kHz/5mV 3) Transmit	AF V.M			Check	±3kHz±0.2kHz (Wide) ±1.5kHz±0.1kHz (Narrow)
8. DQT deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit	Modulation analyzer or Linear detector (LPF : 3kHz) Oscilloscope			±0.75kHz (Wide) ±0.35kHz (Narrow)	±0.05kHz
9. QT deviation	1) CH : TX low (Wide) CH : TX center (Wide/Narrow) CH : TX high (Wide) 2) Transmit				±0.75kHz (Wide) ±0.35kHz (Narrow)	±0.05kHz
10. DTMF deviation	1) CH : TX center (Wide/Narrow) 2) Transmit				±3.0kHz (Wide) ±1.5kHz (Narrow)	±0.2kHz

TK-7100 PC BOARD

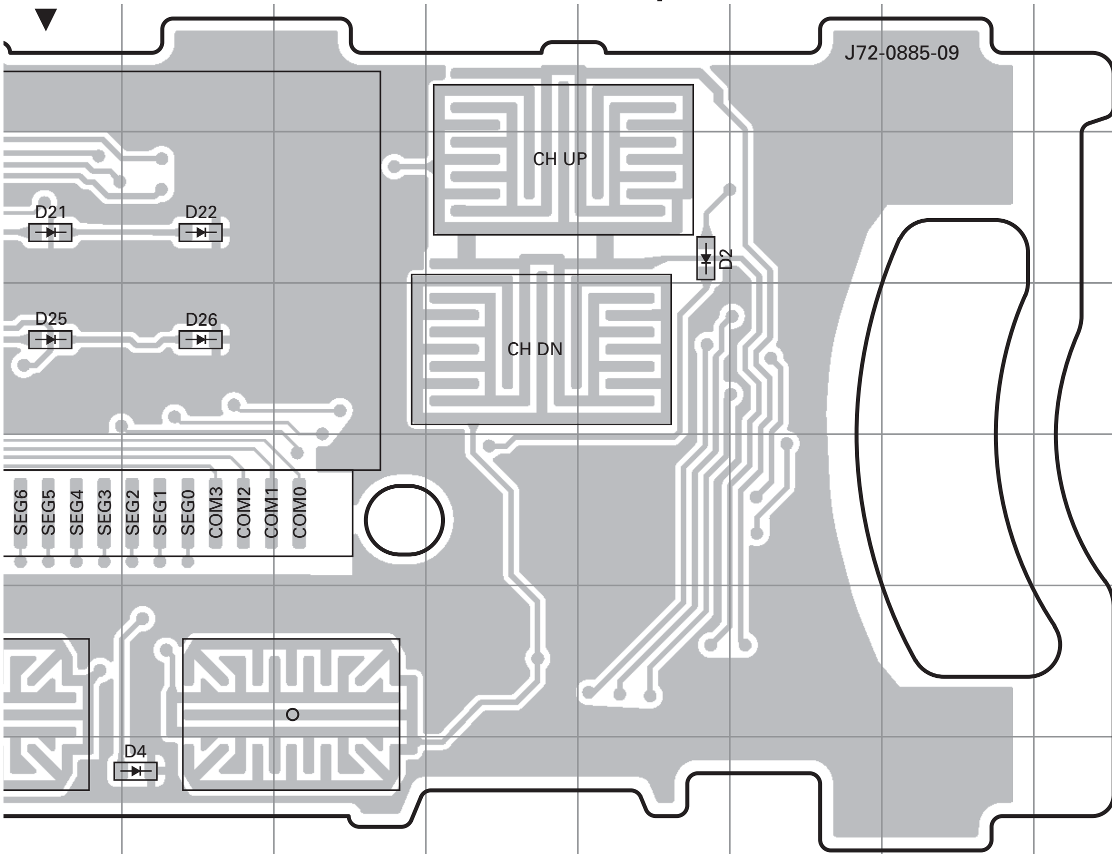
DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)



DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)



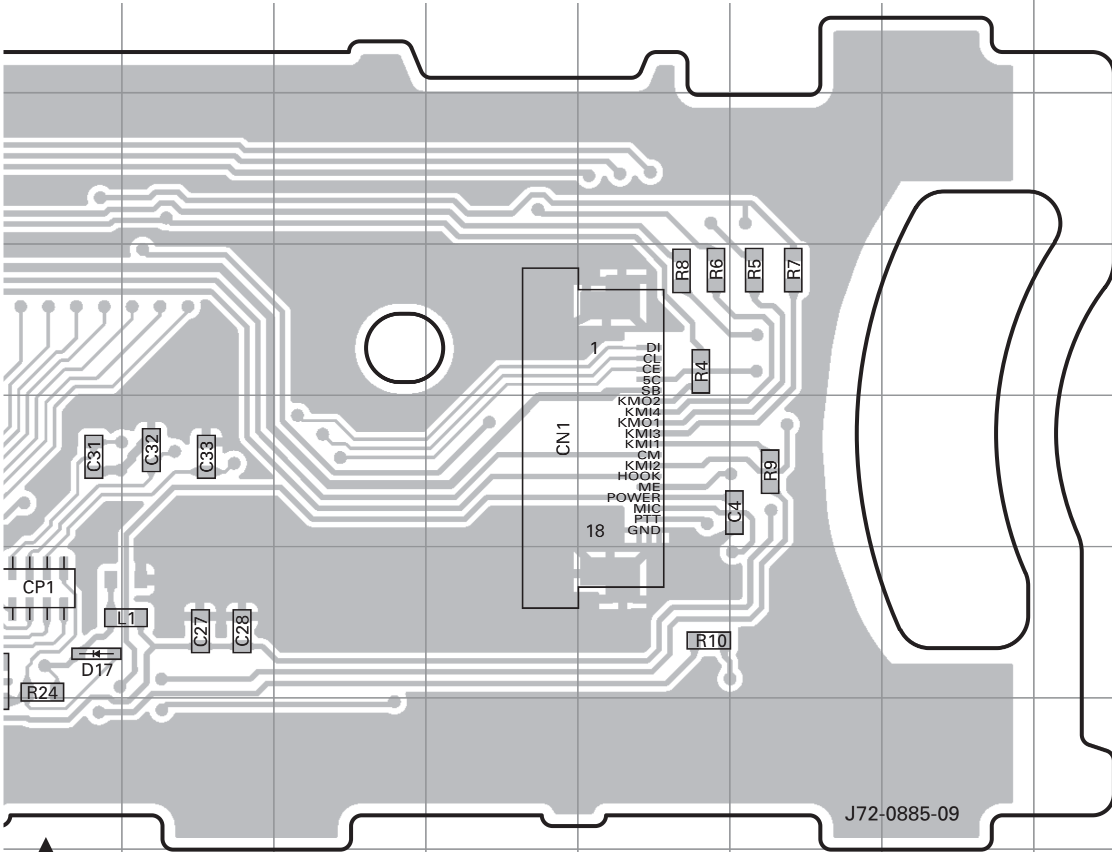
DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)



Ref. No.	Address	Ref. No.	Address
D2	3N	D23	4H
D3	3C	D24	4I
D4	7K	D25	4J
D5	7G	D26	4K
D19	3H	D28	3F
D20	3I	D29	4F
D21	3J	D30	4G
D22	3K	D31	3G

Component side
Layer 1
Layer 2
Foil side

DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)



Ref. No.	Address	Ref. No.	Address
IC2	11I	Q11	12E
Q6	11C	D17	12J
Q9	11F	D18	12D
Q10	11C	D27	11B

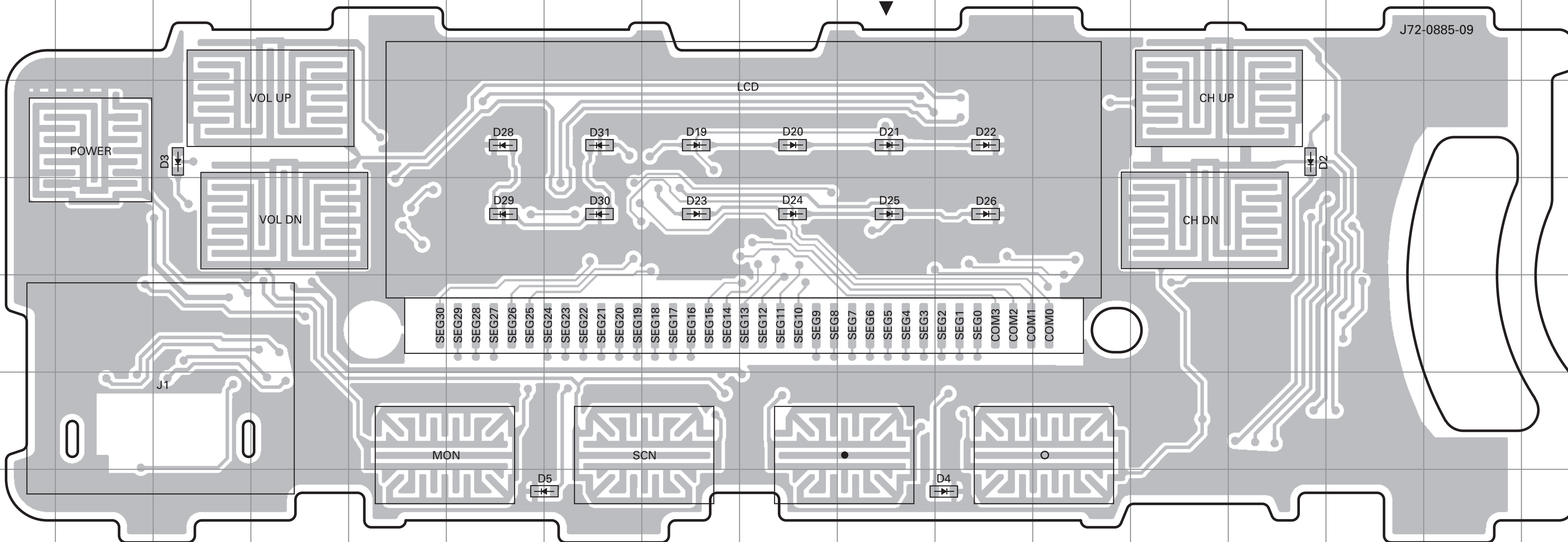
Component side
Layer 1
Layer 2
Foil side

TK-7100 PC BOARD

PC BOARD TK-7100

DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)

DISPLAY UNIT (X54-3430-20) Component side view (J72-0885-09)

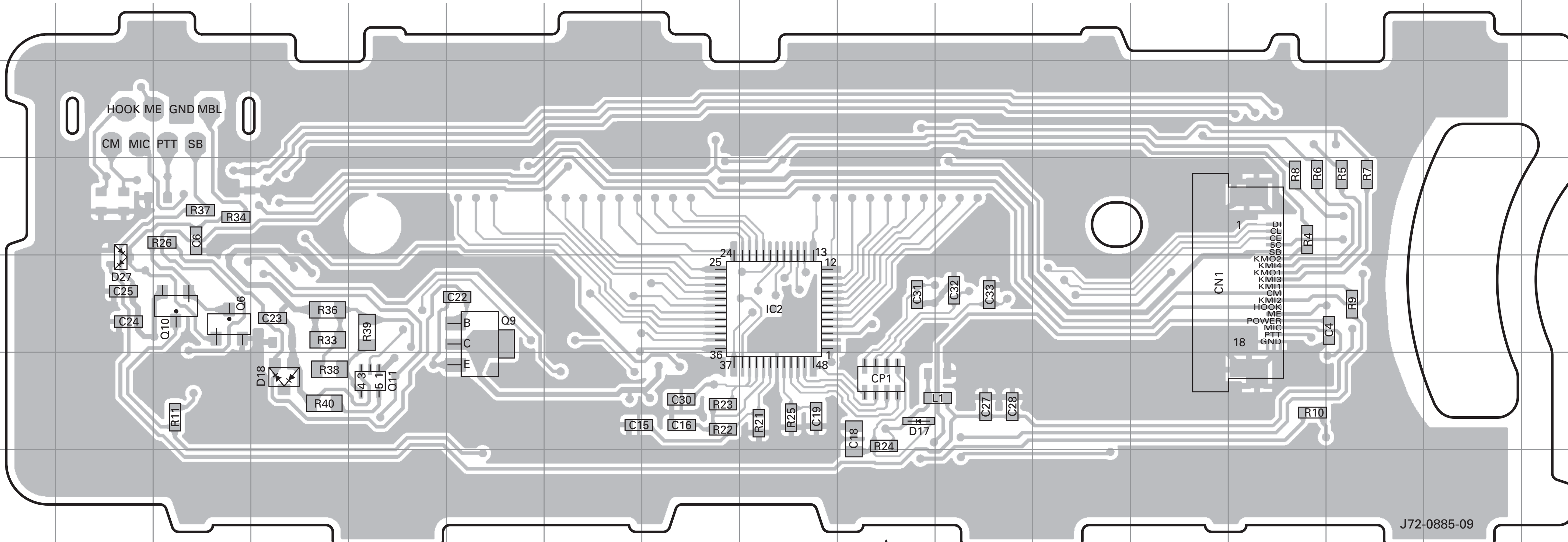


Ref. No.	Address	Ref. No.	Address
D2	3N	D23	4H
D3	3C	D24	4I
D4	7K	D25	4J
D5	7G	D26	4K
D19	3H	D28	3F
D20	3I	D29	4F
D21	3J	D30	4G
D22	3K	D31	3G

Component side
Layer 1
Layer 2
Foil side

DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)

DISPLAY UNIT (X54-3430-20) Foil side view (J72-0885-09)

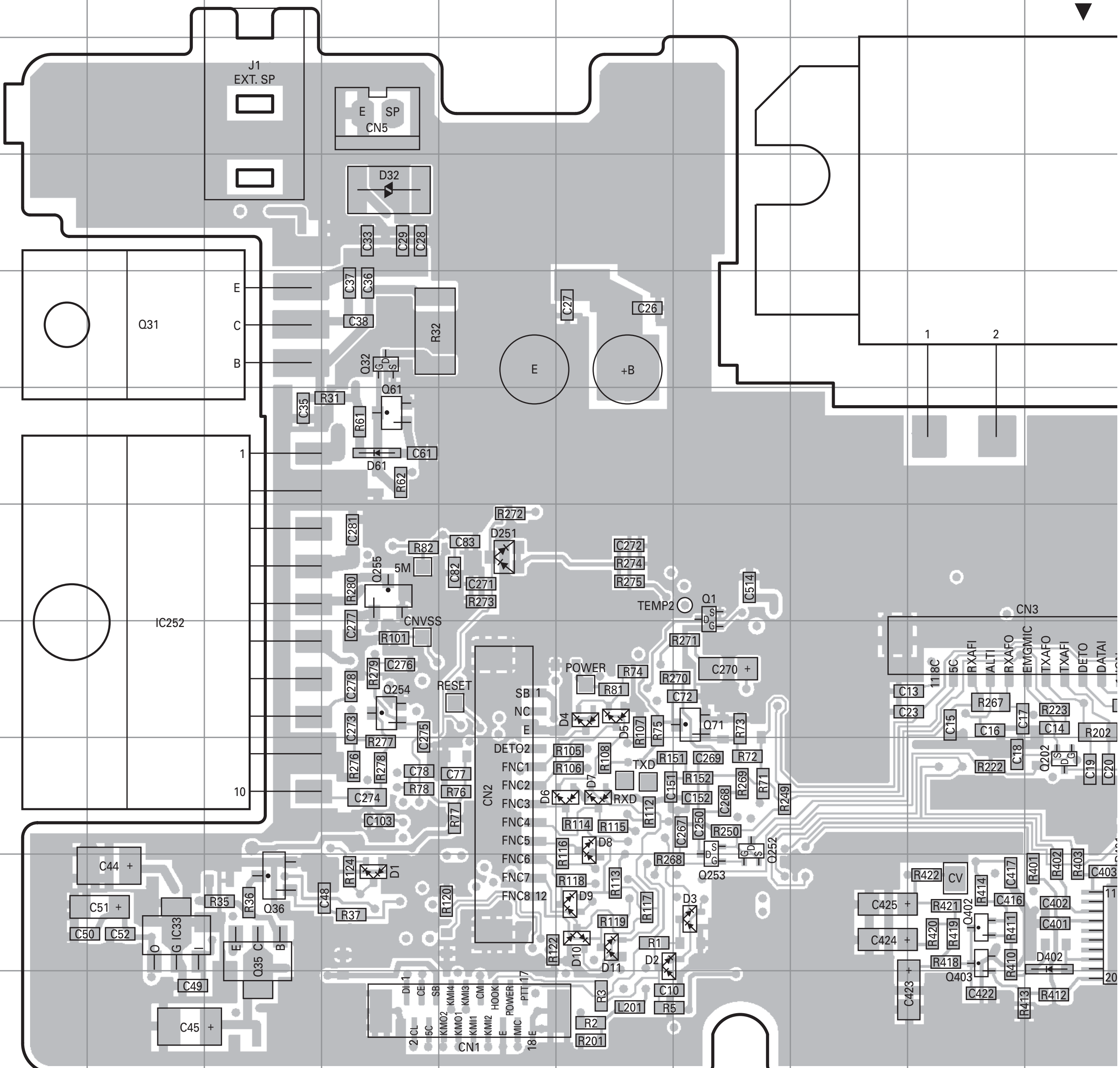


Ref. No.	Address	Ref. No.	Address
IC2	11I	Q11	12E
Q6	11C	D17	12J
Q9	11F	D18	12D
Q10	11C	D27	11B

Component side
Layer 1
Layer 2
Foil side

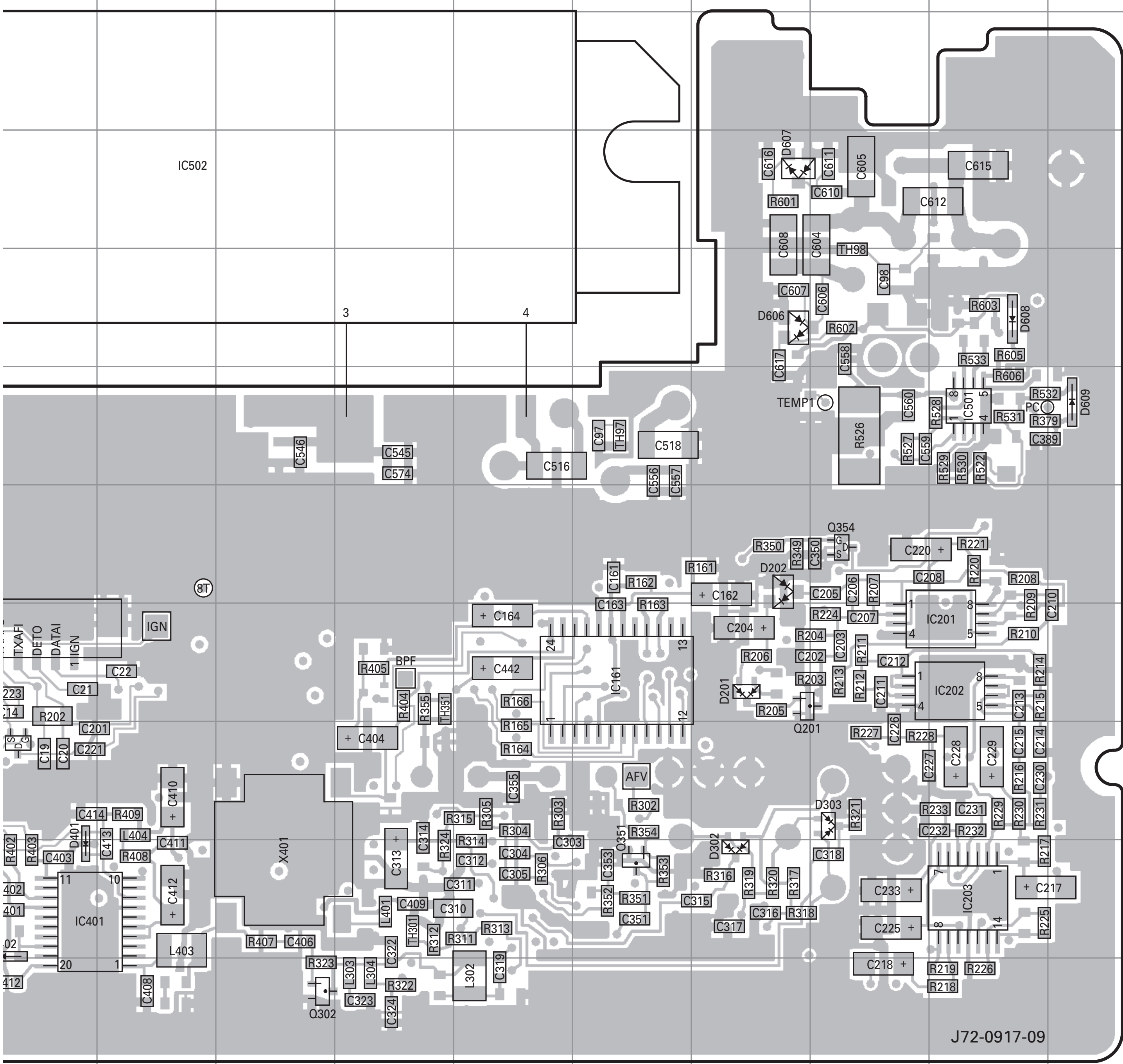
TK-7100 PC BOARD

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Component side view (J72-0917-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC33	10B	IC502	4K	Q201	8P	Q354	7Q	D6	9F	D201	8P	D607	4P
IC161	8O	Q1	7G	Q202	9J	Q402	10I	D7	9F	D202	7P	D608	5R
IC201	8R	Q31	5B	Q252	9G	Q403	10I	D8	9F	D251	7E	D609	6S
IC202	8R	Q32	5D	Q253	10G	D1	10D	D9	10F	D302	10P		
IC203	10R	Q35	10C	Q254	8D	D2	10F	D10	10F	D303	9Q		
IC252	8B	Q36	10C	Q255	7D	D3	10G	D11	10F	D401	10J		
IC401	10J	Q61	6D	Q302	11L	D4	8F	D32	4D	D402	10J		
IC501	6R	Q71	8G	Q351	10O	D5	8F	D61	6D	D606	5P		

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Component side view (J72-0917-09)



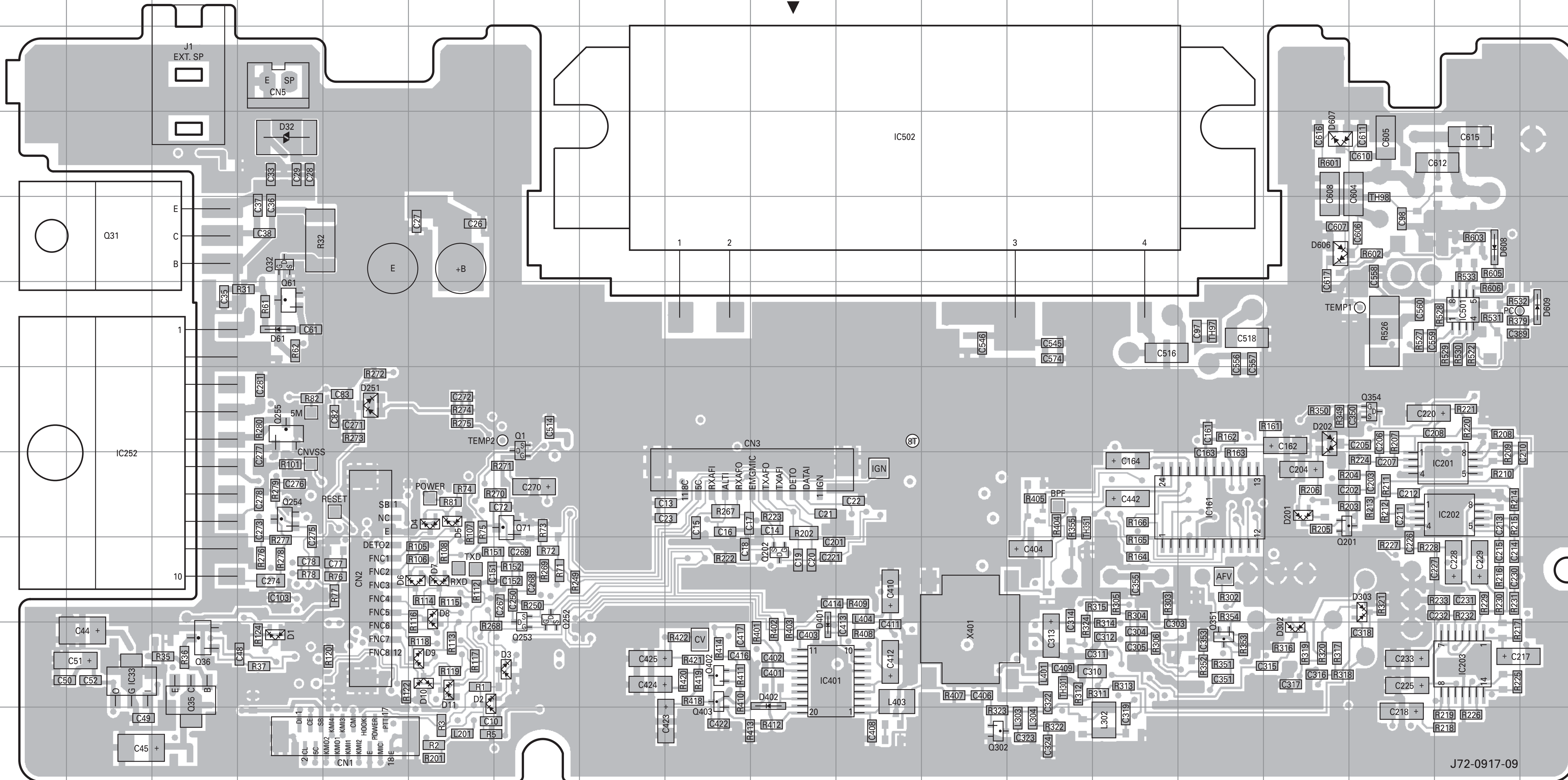
Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TK-7100 PC BOARD

PC BOARD TK-7100

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Component side view (J72-0917-09)

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Component side view (J72-0917-09)

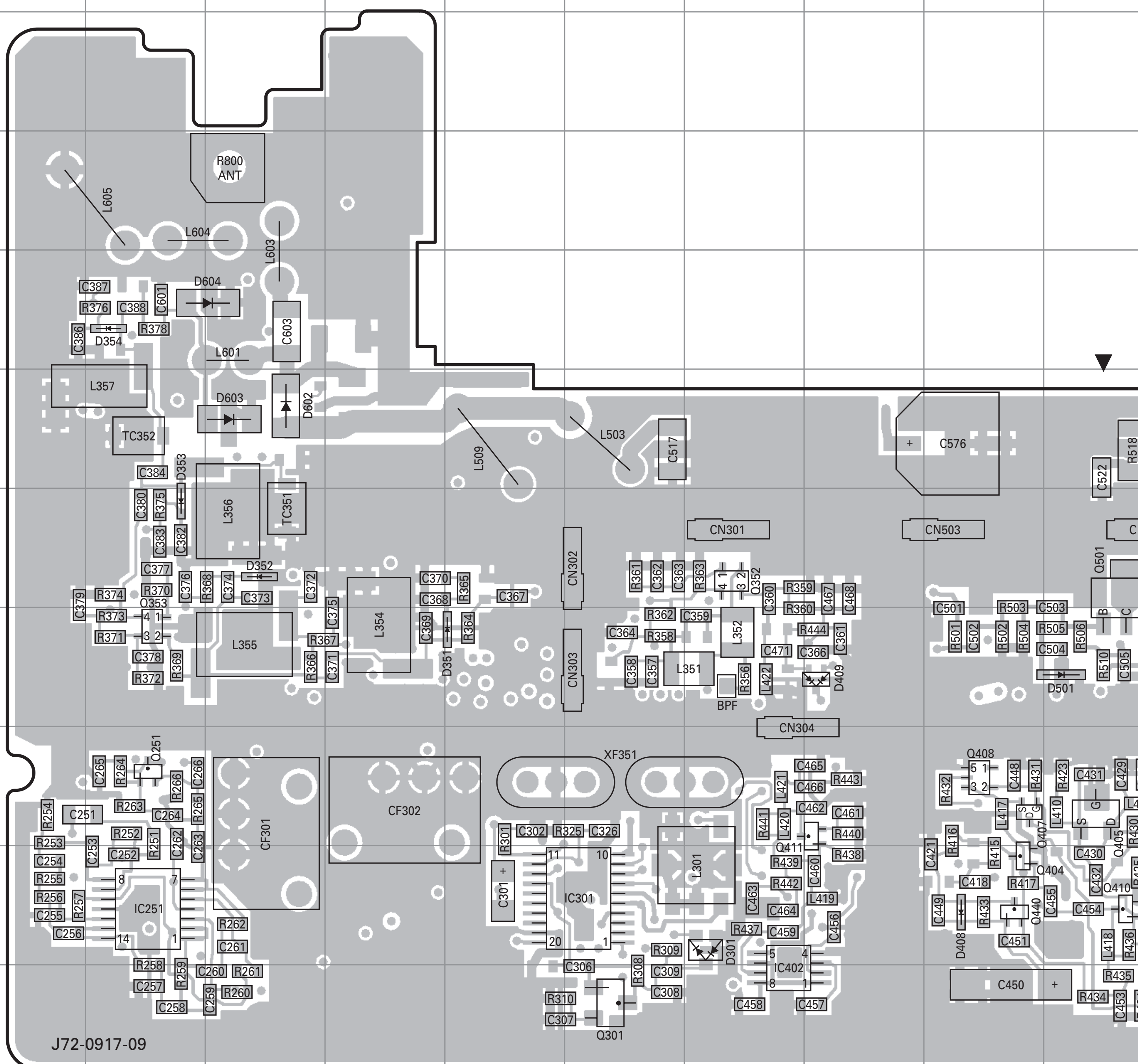


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC33	10B	IC502	4K	Q201	8P	Q354	7Q	D6	9F	D201	8P	D607	4P
IC161	8O	Q1	7G	Q202	9J	Q402	10I	D7	9F	D202	7P	D608	5R
IC201	8R	Q31	5B	Q252	9G	Q403	10I	D8	9F	D251	7E	D609	6S
IC202	8R	Q32	5D	Q253	10G	D1	10D	D9	10F	D302	10P		
IC203	10R	Q35	10C	Q254	8D	D2	10F	D10	10F	D303	9Q		
IC252	8B	Q36	10C	Q255	7D	D3	10G	D11	10F	D401	10J		
IC401	10J	Q61	6D	Q302	11L	D4	8F	D32	4D	D402	10J		
IC501	6R	Q71	8G	Q351	10O	D5	8F	D61	6D	D606	5P		

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TK-7100 PC BOARD

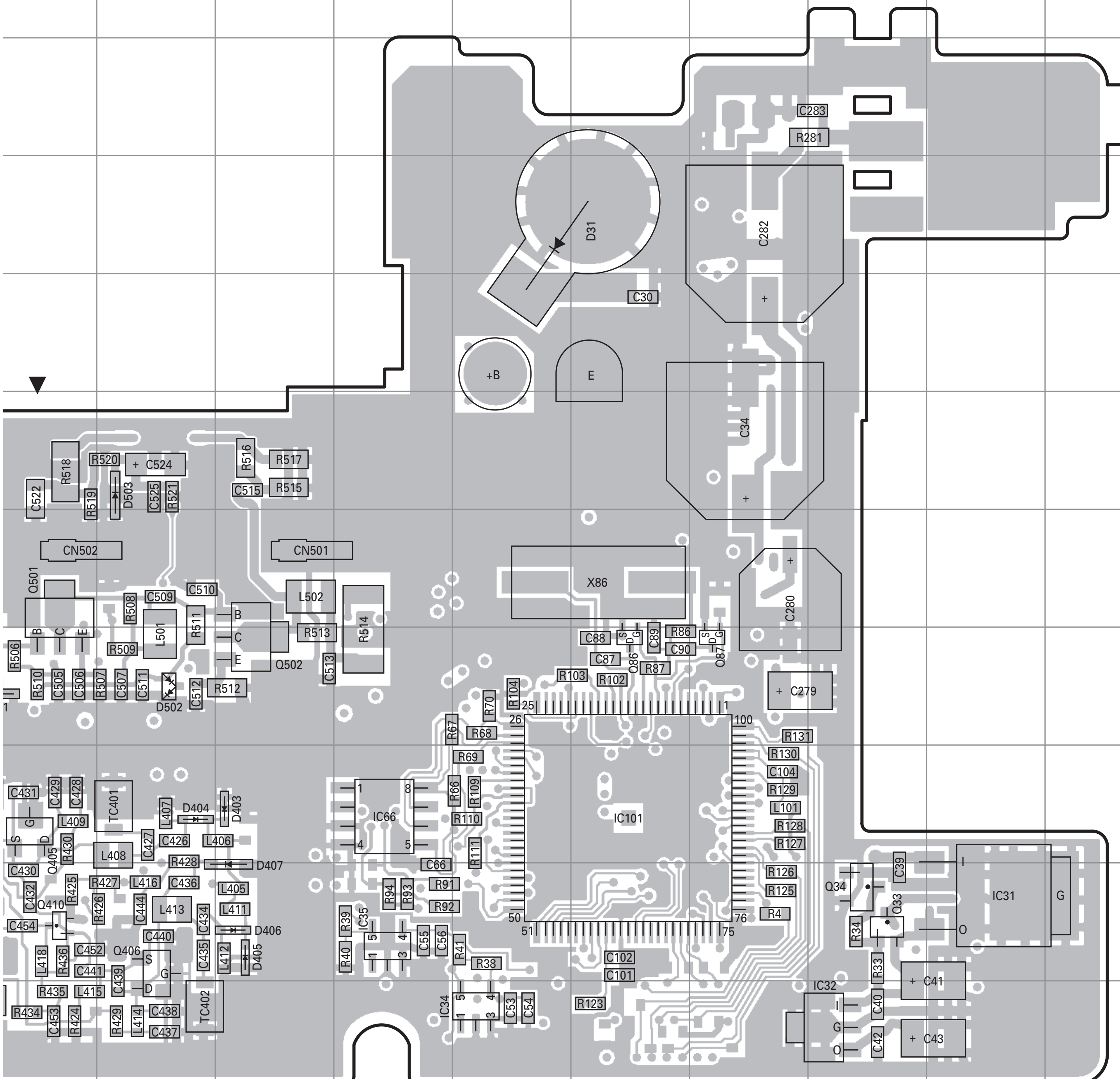
TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Foil side view (J72-0917-09)



Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC31	10R	IC402	11G	Q353	8B	Q440	10I	D354	5B	D501	8J
IC32	11Q	Q33	10Q	Q404	10I	Q501	7J	D403	9L	D502	8K
IC34	11N	Q34	10Q	Q405	9J	Q502	8L	D404	9K	D503	6K
IC35	10M	Q86	8O	Q406	10K	D31	4O	D405	10L	D602	6C
IC66	9M	Q87	8P	Q407	9I	D301	10G	D406	10L	D603	6C
IC101	9O	Q251	9B	Q408	9I	D351	8E	D407	10L	D604	5C
IC251	10B	Q301	11F	Q410	10J	D352	7C	D408	10I		
IC301	10F	Q352	7G	Q411	9H	D353	7B	D409	8H		

PC BOARD TK-7100

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Foil side view (J72-0917-09)



Component side

Layer 1	
Layer 2	
Layer 3	
Layer 4	(shaded)

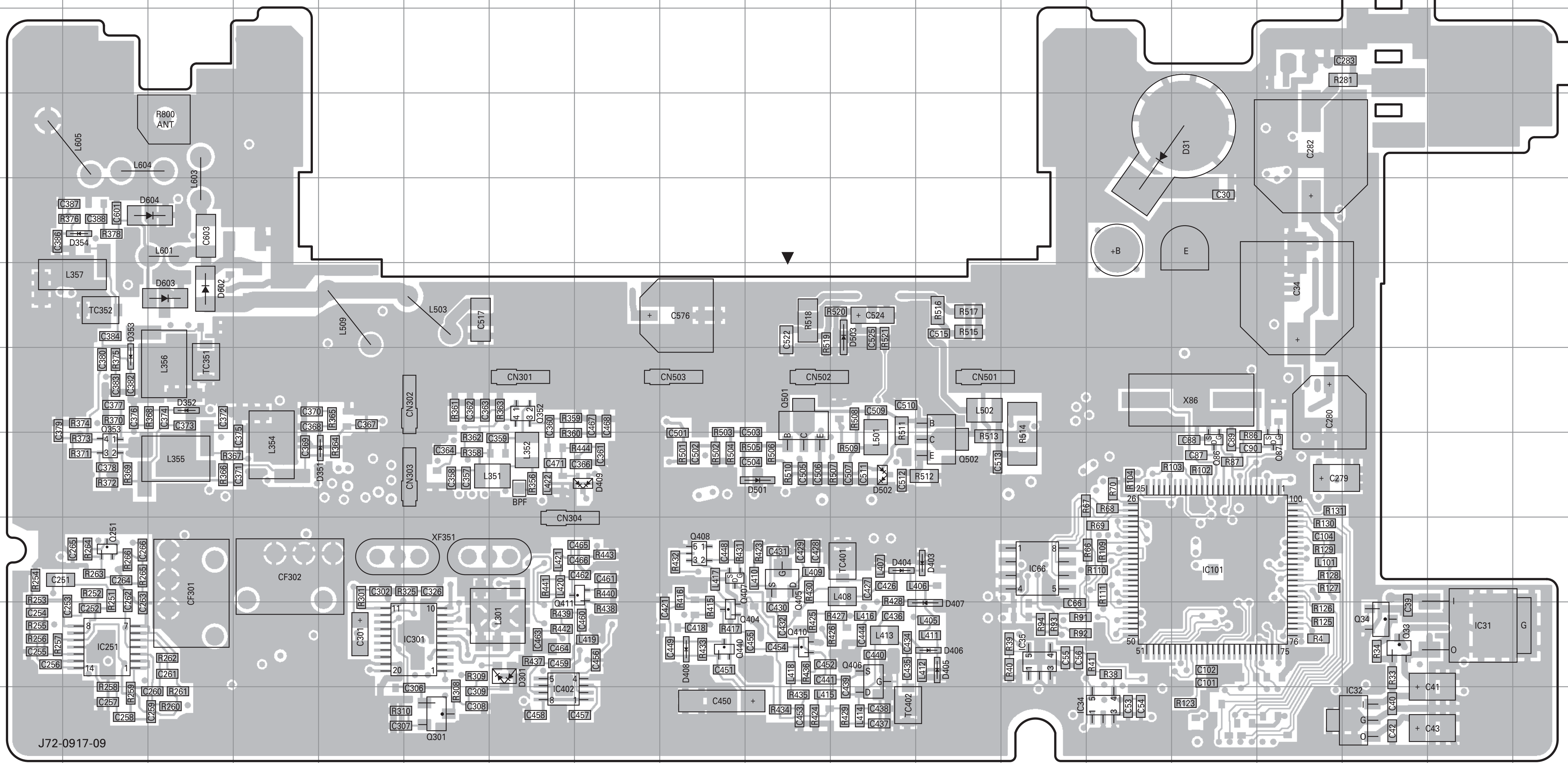
Foil side

TK-7100 PC BOARD

PC BOARD TK-7100

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Foil side view (J72-0917-09)

TX-RX UNIT (X57-6910-XX) -20 : K,M -21 : M2
Foil side view (J72-0917-09)

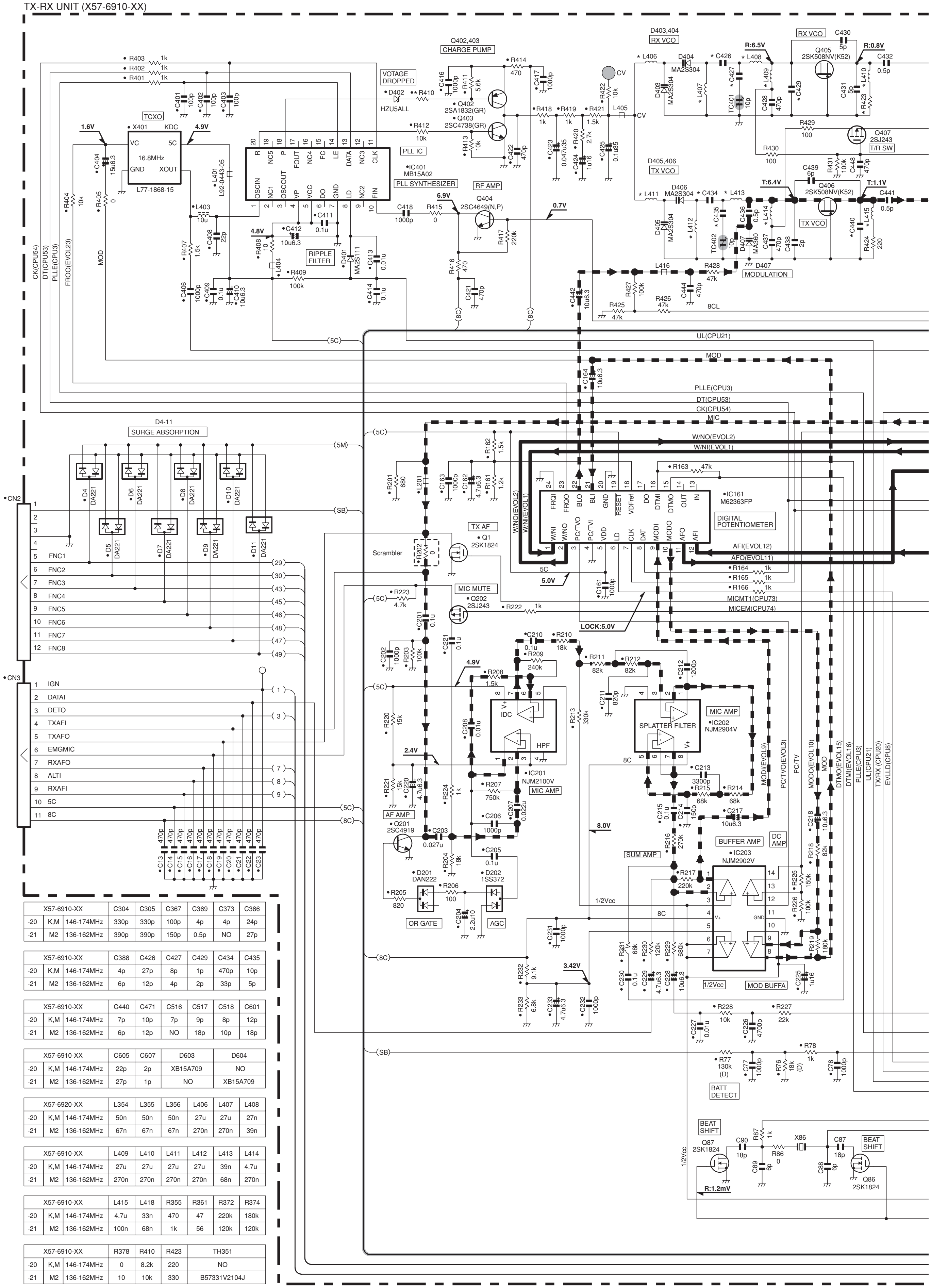


Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address	Ref. No.	Address
IC31	10R	IC402	11G	Q353	8B	Q440	10I	D354	5B	D501	8J
IC32	11Q	Q33	10Q	Q404	10I	Q501	7J	D403	9L	D502	8K
IC34	11N	Q34	10Q	Q405	9J	Q502	8L	D404	9K	D503	6K
IC35	10M	Q86	8O	Q406	10K	D31	4O	D405	10L	D602	6C
IC66	9M	Q87	8P	Q407	9I	D301	10G	D406	10L	D603	6C
IC101	9O	Q251	9B	Q408	9I	D351	8E	D407	10L	D604	5C
IC251	10B	Q301	11F	Q410	10J	D352	7C	D408	10I		
IC301	10F	Q352	7G	Q411	9H	D353	7B	D409	8H		

Component side
Layer 1
Layer 2
Layer 3
Layer 4
Foil side

TK-7100 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6910-XX)



X57-6910-XX			C304	C305	C367	C369	C373	C386
-20	K,M	146-174MHz	330p	330p	100p	4p	4p	24p
-21	M2	136-162MHz	390p	390p	150p	0.5p	NO	27p

X57-6910-XX			C388	C426	C427	C429	C434	C435
-20	K,M	146-174MHz	4p	27p	8p	1p	470p	10p
-21	M2	136-162MHz	6p	12p	4p	2p	33p	5p

X57-6910-XX			C440	C471	C516	C517	C518	C601
-20	K,M	146-174MHz	7p	10p	7p	9p	8p	12p
-21	M2	136-162MHz	6p	12p	NO	18p	10p	18p

X57-6910-XX			C605	C607	D603	D604
-20	K,M	146-174MHz	22p	2p	XB15A709	NO
-21	M2	136-162MHz	27p	1p	NO	XB15A709

X57-6920-XX			L354	L355	L356	L406	L407	L408
-20	K,M	146-174MHz	50n	50n	50n	27u	27u	27n
-21	M2	136-162MHz	67n	67n	67n	270n	270n	39n

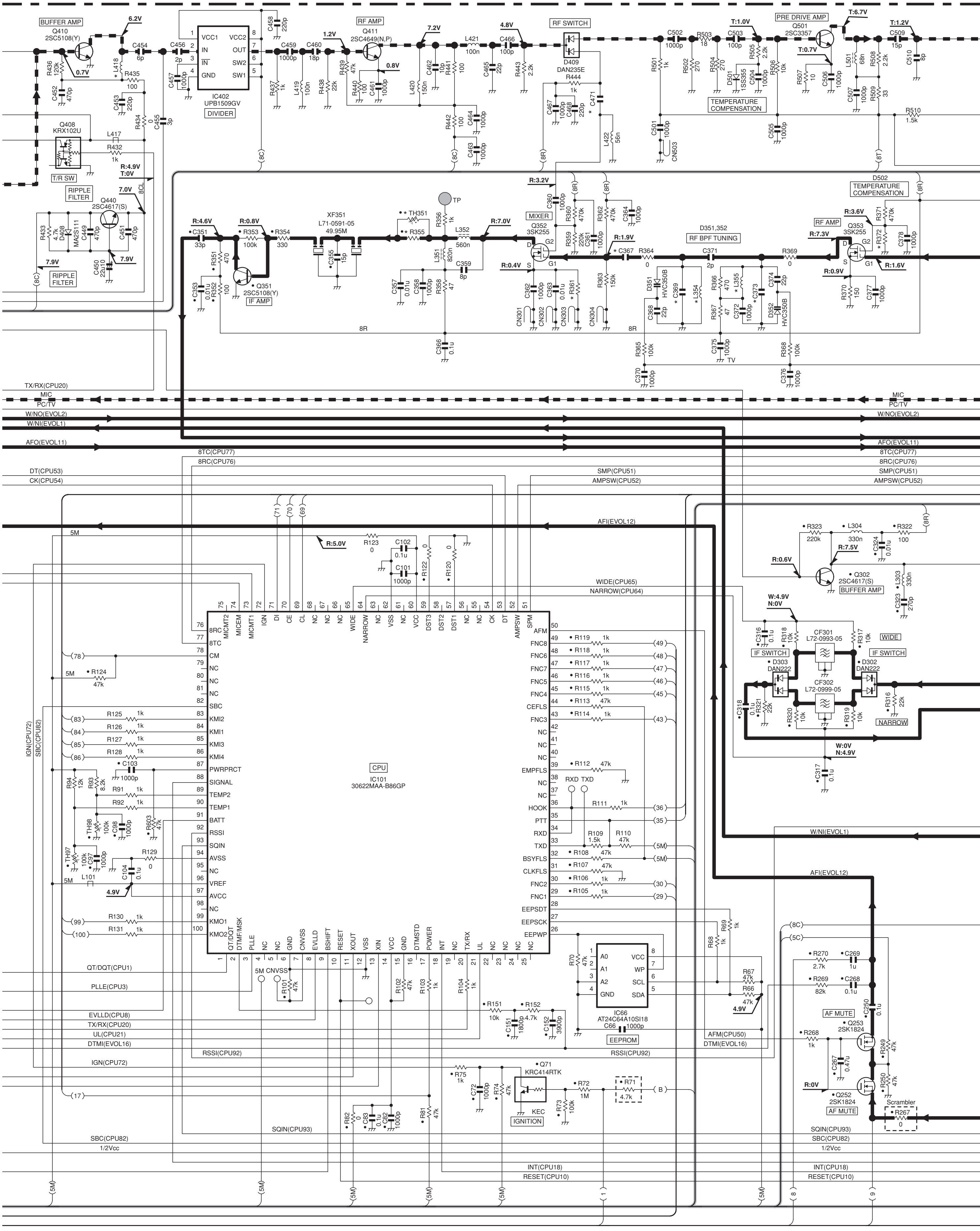
X57-6910-XX			L409	L410	L411	L412	L413	L414
-20	K,M	146-174MHz	27u	27u	27u	27u	39n	4.7u
-21	M2	136-162MHz	270n	270n	270n	270n	68n	270n

X57-6910-XX			L415	L418	R355	R361	R372	R374
-20	K,M	146-174MHz	4.7u	33n	470	47	220k	180k
-21	M2	136-162MHz	100n	68n	1k	56	120k	120k

X57-6910-XX			R378	R410	R423	TH351
-20	K,M	146-174MHz	0	8.2k	220	NO
-21	M2	136-162MHz	10	10k	330	B57331V2104J

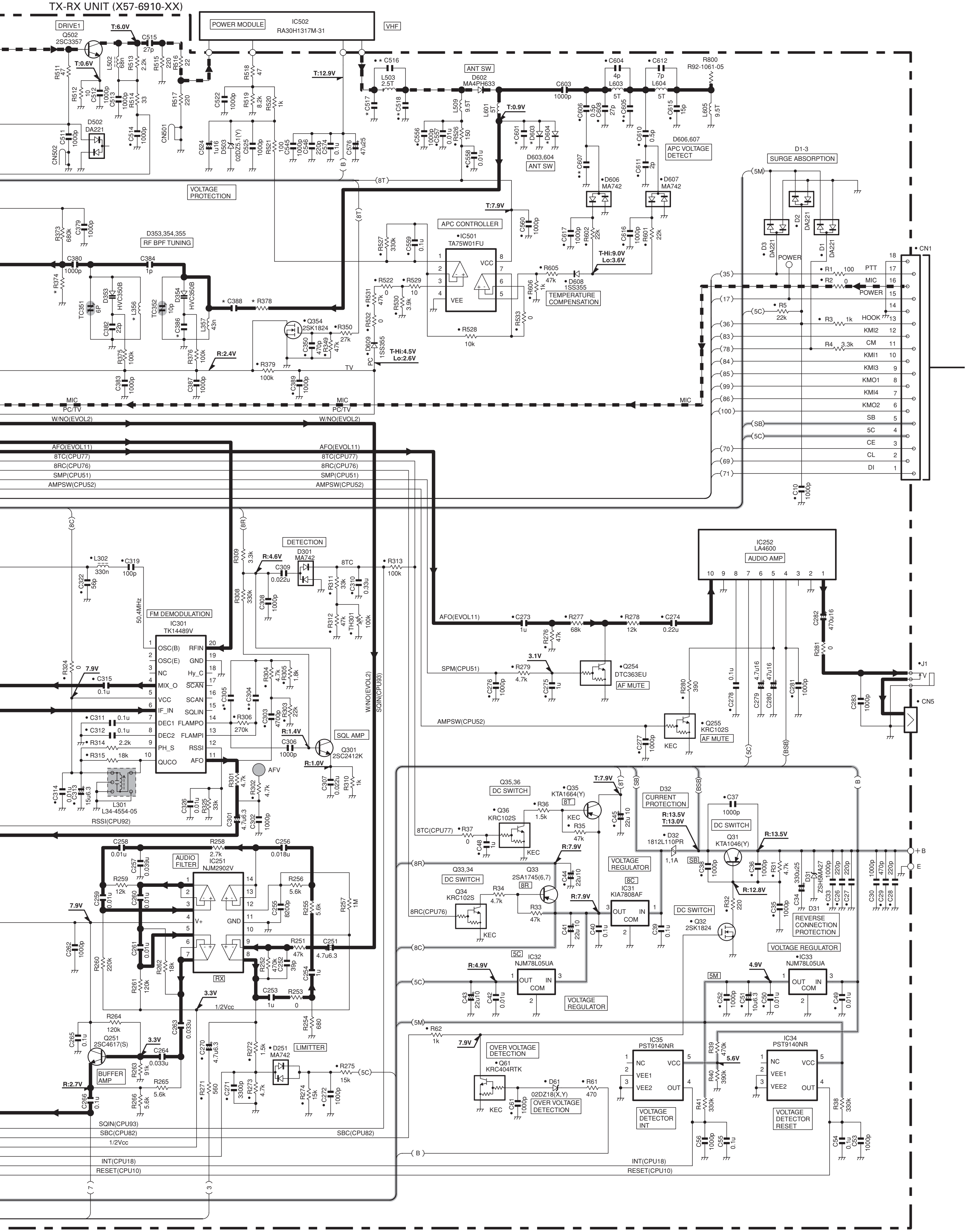
SCHEMATIC DIAGRAM TK-7100

TX-RX UNIT (X57-6910-XX)



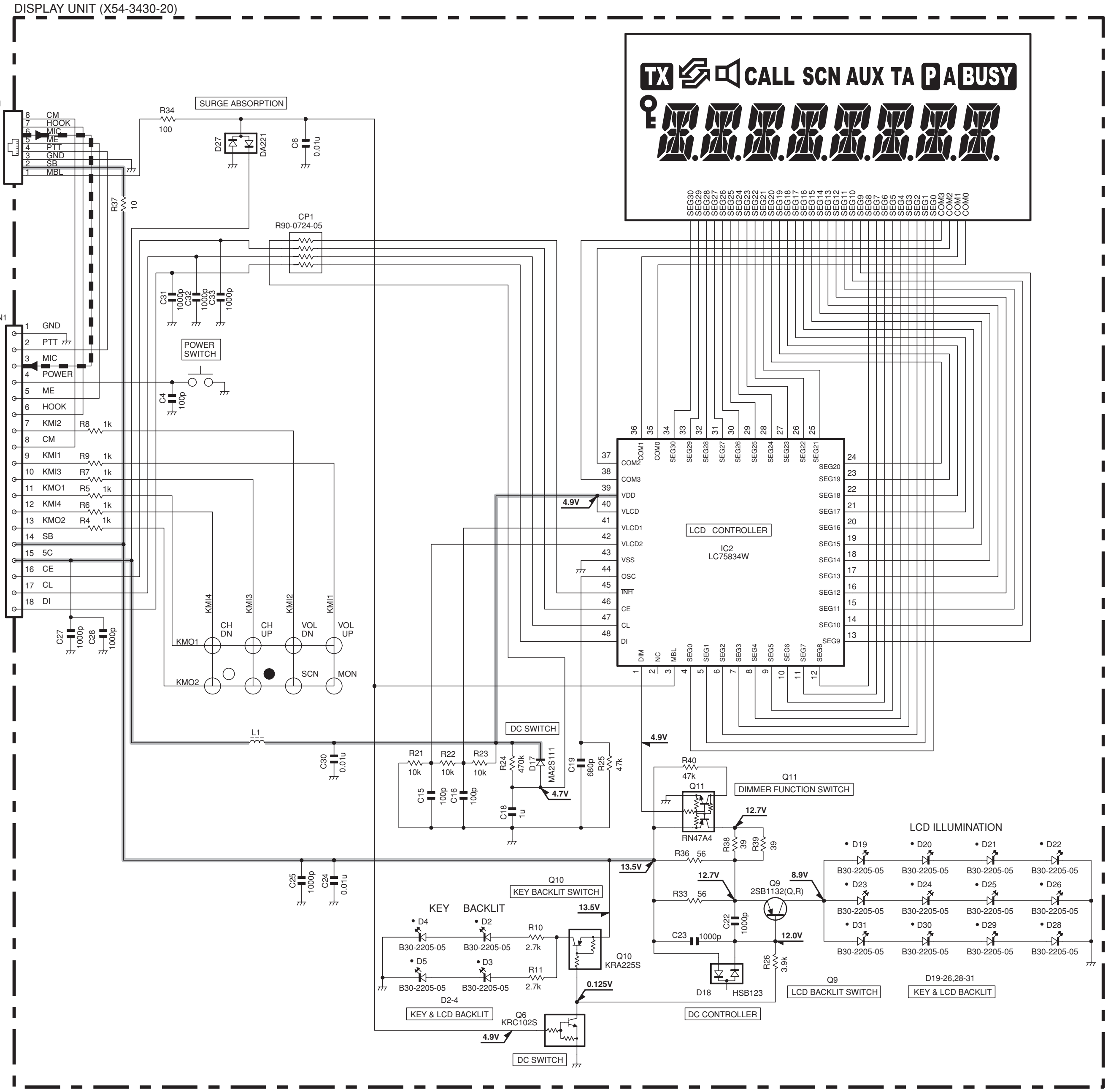
TK-7100 SCHEMATIC DIAGRAM

TX-RX UNIT (X57-6910-XX)


SCHEMATIC DIAGRAM TK-7100

DISPLAY UNIT (X54-3430-20)



Note : The components marked with a dot (•) are parts of layer 1.



X57-6910-XX			C304	C305	C367	C369	C373	C386
-20	K,M	146-174MHz	330p	330p	100p	4p	4p	24p
-21	M2	136-162MHz	390p	390p	150p	0.5p	NO	27p

X57-6910-XX			C388	C426	C427	C429	C434	C435
-20	K,M	146-174MHz	4p	27p	8p	1p	470p	10p
-21	M2	136-162MHz	6p	12p	4p	2p	33p	5p

X57-6910-XX			C440	C471	C516	C517	C518	C601
-20	K,M	146-174MHz	7p	10p	7p	9p	8p	12p
-21	M2	136-162MHz	6p	12p	NO	18p	10p	18p

X57-6910-XX			C605	C607	D603	D604
-20	K,M	146-174MHz	22p	2p	XB15A709	NO
-21	M2	136-162MHz	27p	1p	NO	XB15A709

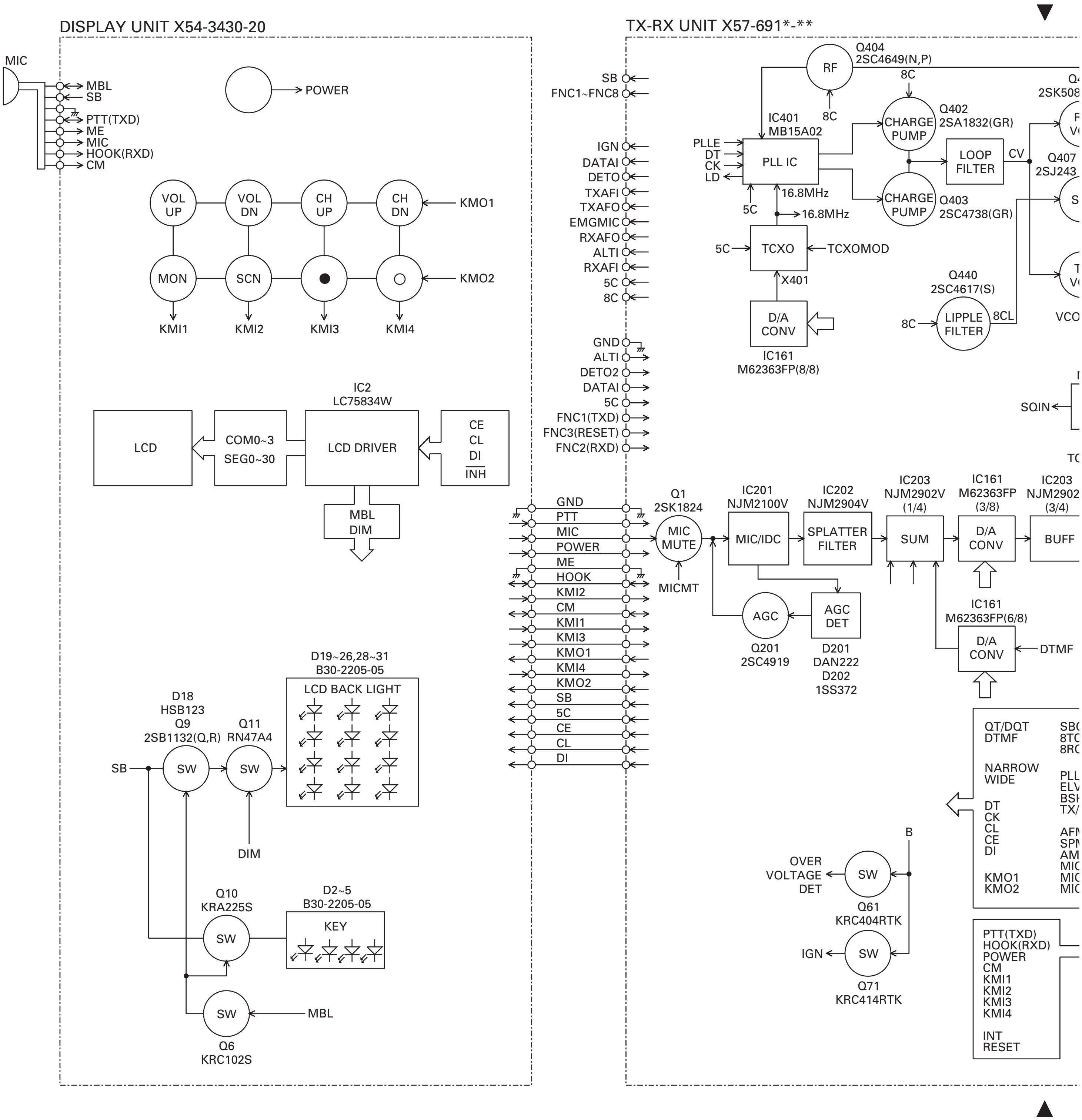
X57-6920-XX			L354	L355	L356	L406	L407	L408
-20	K,M	146-174MHz	50n	50n	50n	27u	27u	27n
-21	M2	136-162MHz	67n	67n	67n	270n	270n	39n

X57-6910-XX			L409	L410	L411	L412	L413	L414
-20	K,M	146-174MHz	27u	27u	27u	27u	39n	4.7u
-21	M2	136-162MHz	270n	270n	270n	270n	68n	270n

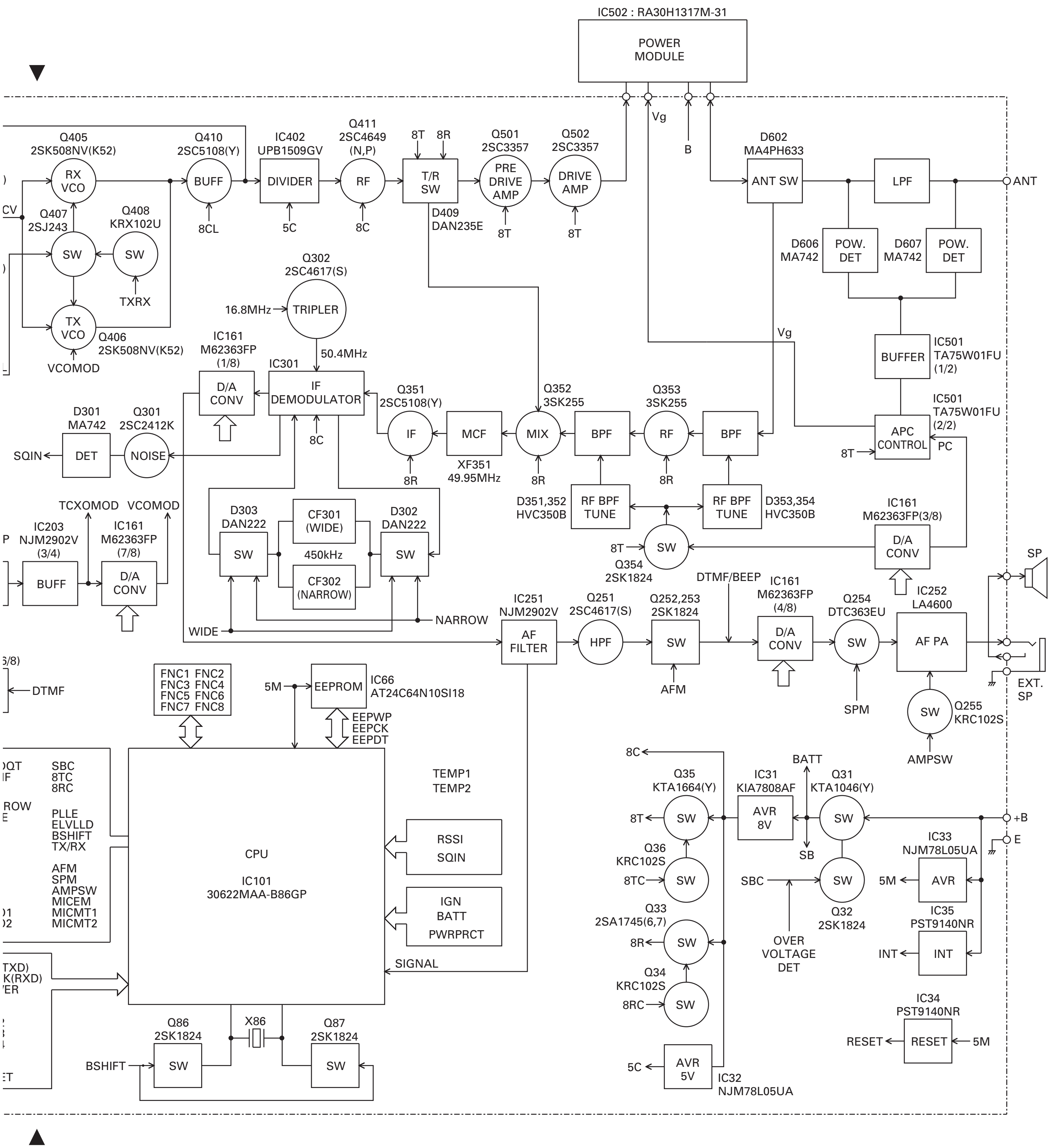
X57-6910-XX			L415	L418	R355	R361	R372	R374
-20	K,M	146-174MHz	4.7u	33n	470	47	220k	180k
-21	M2	136-162MHz	100n	68n	1k	56	120k	120k

X57-6910-XX			R378	R410	R423	TH351
-20	K,M	146-174MHz	0	8.2k	220	NO
-21	M2	136-162MHz	10	10k	330	B57331V2104J

BLOCK DIAGRAM

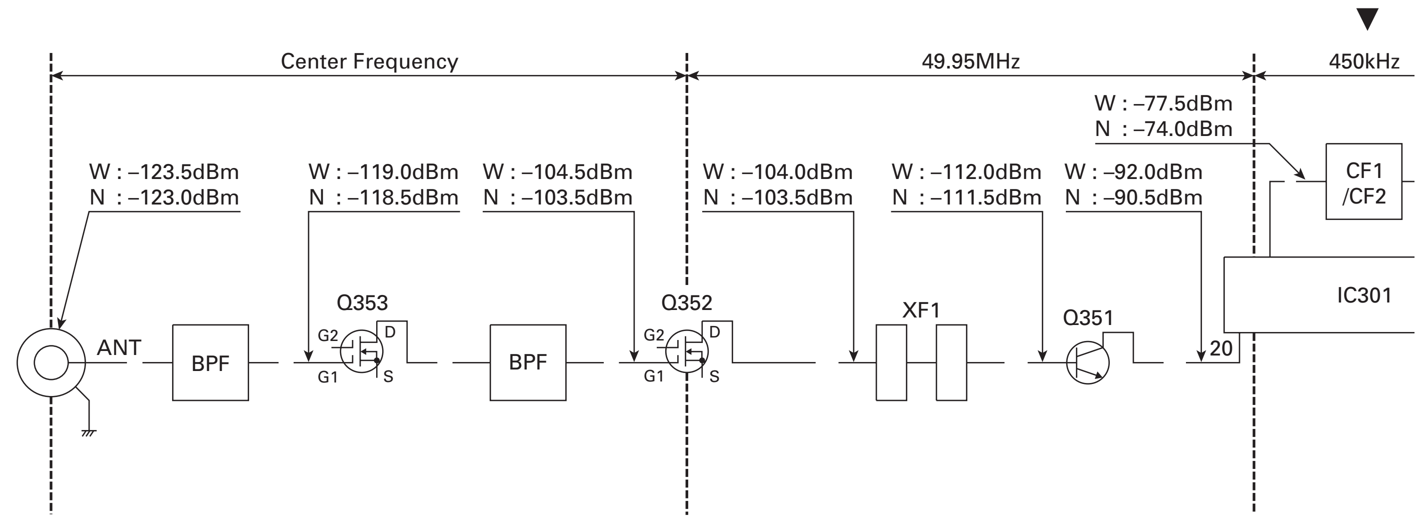


BLOCK DIAGRAM



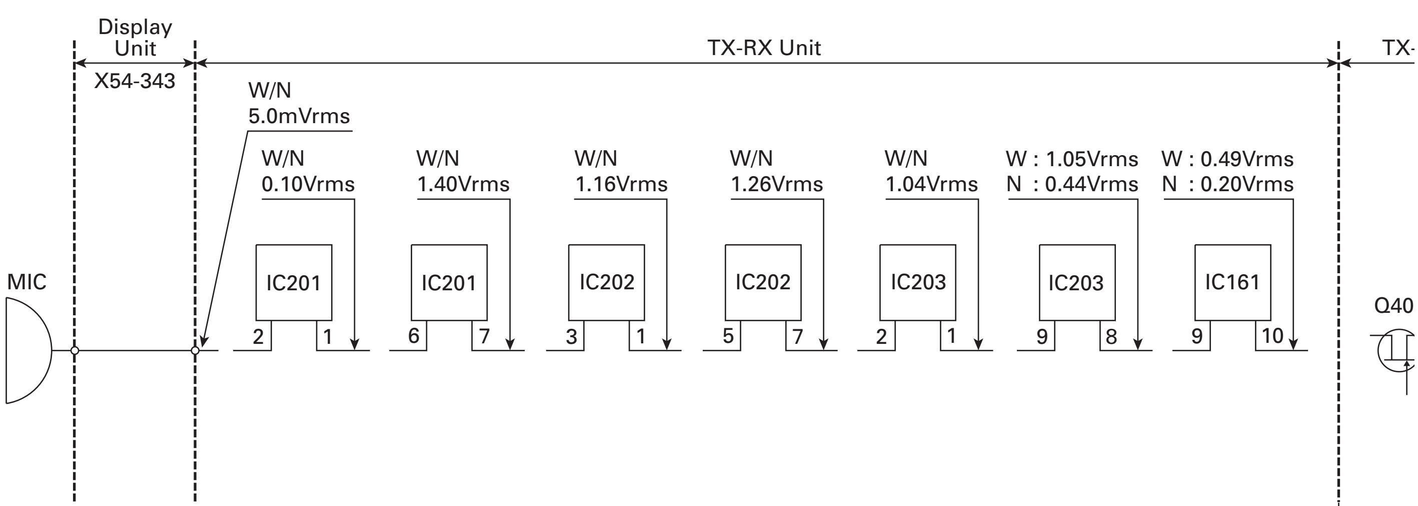
LEVEL DIAGRAM

Receiver Section



To make measurements in the RF section, connect the RF level meter.
In the RF section, use a 0.01µF coupling capacitor.
(The display shows the SSG input value required to obtain 12dB SIN

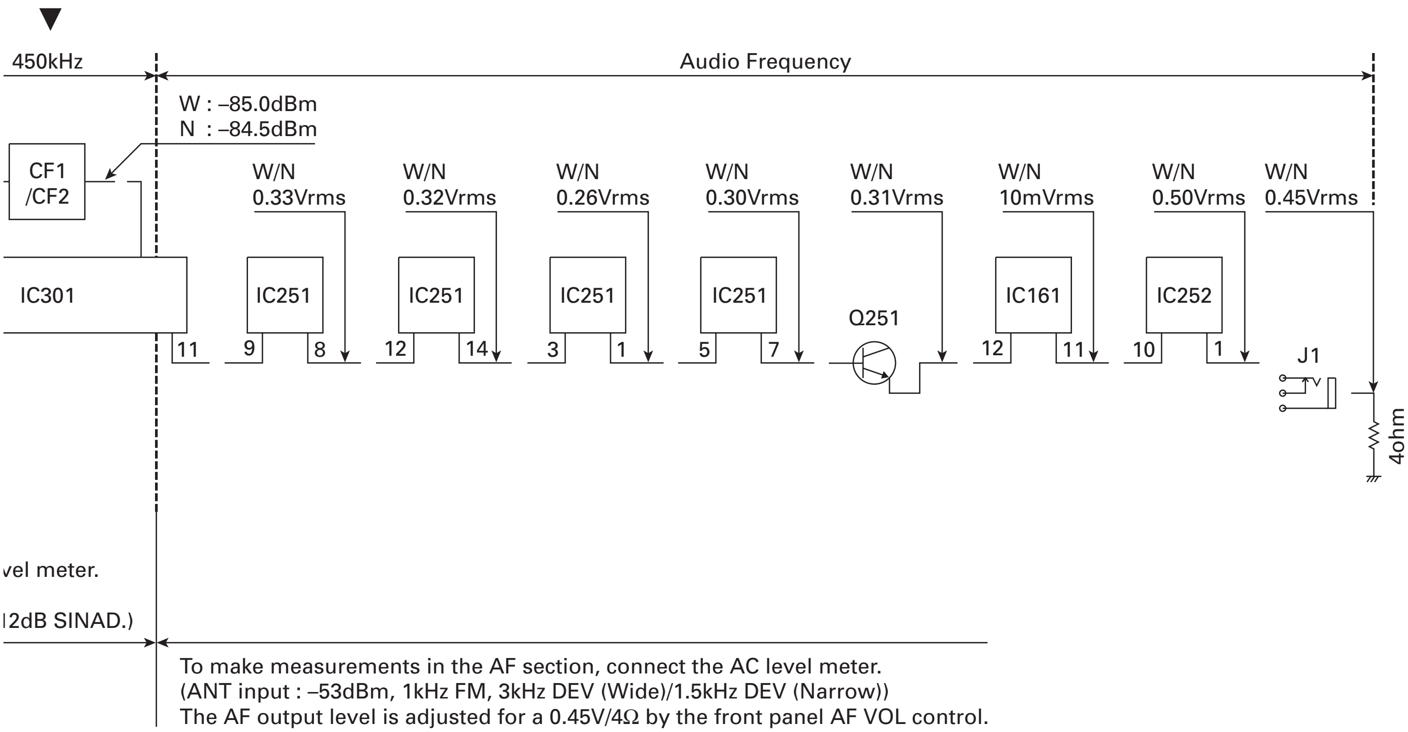
Transmitter Section

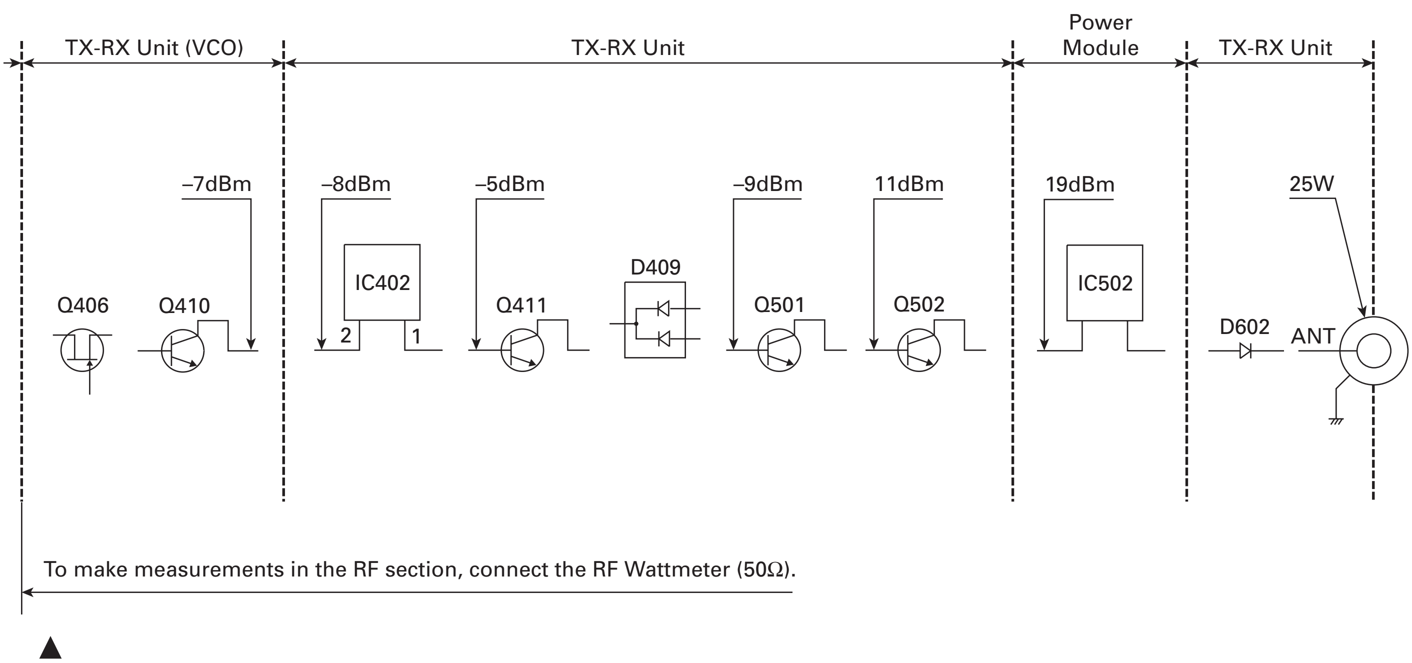


To make measurements in the AF section, connect the AC level meter.
AG is set so that MIC input becomes 3kHz/1.5kHz (Wide/Narrow) DEV at 1kHz MOD.

To ma

LEVEL DIAGRAM





TERMINAL FUNCTION

CN1

No.	Name	I/O	Function
1	DI		Data
2	CL		Clock
3	CE		Chip enable
4	5C		5V
5	SB		Switched B
6	KMO2	O	Key matrix output 2
7	KMI4	I	Key matrix input 4
8	KMO1	O	Key matrix output 1
9	KMI3	I	Key matrix input 3
10	KMI1	I	Key matrix input 1
11	CM		MIC data detection
12	KMI2	I	Key matrix input 2
13	HOOK		Hook detection/RXD
14	ME		MIC ground
15	POWER		Power switch
16	MIC	I	MIC signal input
17	PTT		PTT/TXD
18	GND		Ground

CN2

No.	Name	I/O	Function
1	SB	O	Battery voltage DC supply
2	NC	-	-
3	GND	O	Ground
4	DETO2	O	FM detector output
5	FNC1	I/O	Programable I/O (programmed by FPU)
6	FNC2	I/O	Programable I/O (programmed by FPU)
7	FNC3	I/O	Programable I/O (programmed by FPU)
8	FNC4	I/O	Programable I/O (programmed by FPU)
9	FNC5	I/O	Programable I/O (programmed by FPU)
10	FNC6	I/O	Programable I/O (programmed by FPU)
11	FNC7	I/O	Programable I/O (programmed by FPU)
12	FNC8	I/O	Programable I/O (programmed by FPU)

■ Function Port Assignment

	KDS100, KGP-2A/2B	
	Name	I/O
FNC1	-	-
FNC2	-	-
FNC3	Data Channel	I
FNC4	PTT	I
FNC5	Carrier Operated Relay	O
FNC6	Audio Mute	I
FNC7	Mic Mute	I
FNC8	TX Relay	O
	SmarTrunk II	
	Name	I/O
FNC1	TXD	O
FNC2	RXD	I
FNC3	Reset	O
FNC4	-	-
FNC5	-	-
FNC6	-	-
FNC7	-	-
FNC8	-	-
	Scrambler	
	Name	I/O
FNC1	-	-
FNC2	-	-
FNC3	TX Relay	O
FNC4	Scrambler	O
FNC5	Scrambler Code1 (1)	O
FNC6	Scrambler Code2 (2)	O
FNC7	Scrambler Code3 (4)	O
FNC8	Scrambler Code4 (8)	O

Port Function is Low Active. (Exclude : Scrambler Code)

CN3

No.	Name	I/O	Function
1	IGN	I	Ignition sens input
2	DATAI	I	External transmit signal input
3	DETO	O	FM detector output
4	TXAFI	I	TX audio input from scrambler board
5	TXAFO	O	TX audio output to scrambler board
6	EMGMIC	I	Emergency MIC input (1kHz/1.2mVrms)
7	RXAFO	O	RX audio output to scrambler board
8	ALTI	I	External alert tone signal input
9	RXAFI	I	RX audio input from scrambler board
10	5C	O	5V DC power supply (50mA MAX)
11	8C	O	8V DC power supply (50mA MAX)

SPECIFICATIONS

GENERAL

Frequency Range	K,M : 146 to 174MHz M2 : 136 to 162MHz
Channels / Groups	64CH / 8GRP
Channel Spacing	Wide : 25kHz Narrow : 12.5kHz
PLL Channel Stepping	2.5, 5, 6.25, 7.5kHz
Operating Voltage	13.6V DC ±15%
Current Drain	Less than 0.4A on standby Less than 1.0A on receive Less than 8.0A on transmit
Operating Temperature Range	–30°C to +60°C
Dimensions & Weight	160 W x 43 H x 107 D mm, 1.0kg
Channel Frequency Spread	K,M : 28MHz M2 : 26MHz

RECEIVER (Measurements made per EIA standard EIA/TIA-603)

Sensitivity (12dB SINAD)	Wide : 0.28μV Narrow : 0.35μV
Selectivity	Wide : 75dB Narrow : 65dB
Intermodulation	Wide : 70dB Narrow : 60dB
Spurious Response	75dB
Audio Power Output	4.0W
Frequency Stability	±2.5ppm

TRANSMITTER (Measurements made per EIA standard EIA/TIA-603)

RF Power Output	High : 25W Low : 5W
Spurious and Harmonics	70dB
Modulation	Wide : 16K0F3E Narrow : 11K0F3E
FM Noise	Wide : 45dB Narrow : 40dB
Audio Distortion	Less than 3%
Frequency Stability	±2.5ppm

TK-7100

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KENWOOD ELECTRONICS U.K. LIMITED
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100%